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REVIEWS

Rodeo Games, Hi Q Quiz
and Spooksville tested
by our games experts

FEATURES

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DIY Electron carry
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LISTINGS

Spinning Frustration,
Jet Bike, Robokill and
disc menu creator



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Your sworn oath is to recover the scrolls, you travel to the mystical lands of the Shogun. Already his guards are mastering the ways of the Ninjitsu. To reach the Shogun's Palace you must use all your weapon craft and fighting skills as you travel through dangerous wastelands and magnificent gardens, then descend into the direst dungeons before the final confrontation.



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OVER 8's Older children face the challenge of an adventure game combined with a series of short puzzles. Seven of the programs are self contained but each of these has to be solved before the eighth title can be tackled.

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A fortune in your keyboard

THE first pools predictor for the Electron has been launched by Blue Ribbon (0302 321134). System 8 - The Pools Predictor aims to increase the chance of a win by using a stored database compiled from previous results to calculate the possible outcome of current matches.

It predicts results in the four English and three Scottish leagues and also makes filling in the coupon easier. A perm against plan option displays the punter's selection ready to be copied directly on to the coupon.

The week's data can be entered then saved for future reference by using the save data option.

"The only thing it can't do is lick the stamp", said Mal Thomas, marketing manager of Blue Ribbon.

System 8 - The Pools Predictor costs £2.99.



"I pawed your listing in correctly, but it still won't run"

FOR seven days hundreds of clever canines weaved through poles, padded over seesaws and leapt fences. The country's largest dog agility event was voted a huge success - and it was largely due to an Electron computer.

The contortions of these agile animals and their sprinting owners have turned into

The Electron that leads a dog's life

a boom sport, but its popularity has given Tony Veal a headache.

For six years he has organised the huge South of England Agricultural Society dog agility and obedience show in Sussex, but it became such a daunting task this year that he resorted to Electron help.

It was an unlikely step for a self confessed "non-computer" person, but with a program specially compiled by his friend Paul Gaffney, Tony slashed the organisation time for the show and is now a total convert to the Acorn machine.

Using the Electron proved so successful that Paul's pro-

gram may now be taken up by organisers of other dog shows throughout the country.

Known to thousands of young viewers as the dog agility consultant on BBC TV's *Blue Peter*, Tony is a self-employed salesman from West Kingsdown, Kent and met Croydon-based Paul through business.

"When Paul suggested a computer I thought it would be useless", he told Electron User. "He persuaded me and then spent nine months writing the necessary program. In the end it was marvellous. It saved me weeks of work".

The Electron program printed entry listings, competitors labels and made random draws for up to 250 dogs in each class. It also dealt with the payments for camping fees over the seven days, the accounts for social events throughout the week and many other administrative tasks.

Teamed with a Pegasus disc system from Slogger and a Panasonic KX-P1081 printer, the dog show software was developed on Paul's 32k Electron then used on the 64k Electron bought specially by Tony.

Video in the office

ELECTRON owners who opt for Mini Office, the small business package from Database Software (0625 878888), stand the chance of winning a £500 video recorder.

As sales of Mini Office approach 500,000, Database will present a Sony SLV 401 to the buyer of the half millionth copy revealed by registration cards. The video recorder features slow motion digital effects, perfect pausing, picture in picture and editing.

Launched in October 1984, the original Mini Office broke the price mould for business packages when it was offered for the BBC Micro and Electron at £5.95. It was also the first business package to enter the software charts.

Time called on the pub pirates

A SWINTON licensee took swift action when FAST (The Federation Against Software Theft) stepped in to tell him an illegal software copying den was being run in the back room of his pub.

John Heaton of The Beehive Hotel, Swinton, called time on the pirates and vowed they would never return.

FAST was tipped off about the piracy meetings by a software dealer whose staff had gone along to see what was going on.

Members of Bolton Computer Club and

Swinton Computer Club were believed to be involved but officials of the clubs have stressed that the undercover activities were entirely unofficial and in no way condoned by them.

"It was so blatant", said a spokesman for FAST. "They apparently moved into the pub, set up their machines and started copying. We are sure that copying has now ceased in the pub concerned but you can never be certain that it has not moved somewhere else".

Gallup Software Chart



THIS MONTH	LAST MONTH	TITLE (Software House)	COMMENTS	PRICE
1	●	PLAY IT AGAIN SAM 10 <i>Superior</i>	The latest but not the last of the Sam compilations. This one re-runs Zalaga, 3D Dotty, Repton thru Time and debuts Qwak.	9.95
2	△ 8	JOE BLADE 2 <i>Players</i>	The graphics are good and the game very playable. The puzzle screens are wicked and will keep you busy for hours.	1.99
3	△ 9	YIE AR KUNG FU <i>Hit Squad</i>	There have been many clones of this and any combat game is invariably compared to it. A nice trip into meaningless violence.	2.99
4	●	SOCCER BOSS <i>Alternative</i>	Back into the charts again this month. Not very new but if you fancy your chances for soccer boss stardom, then try this one out.	1.99
5	●	BALLISTIX <i>Superior</i>	Cross between pinball and shove ha'penny. Original, fun and very addictive. A new challenge – different and full of surprises.	9.95
6	▽ 2	SPOOKSVILLE <i>Blue Ribbon</i>	Ghost hunting time again. An arcade adventure, simple and a little dated now. Good value though as you search for your spellbook.	2.99
7	●	RETURN OF R2 <i>Blue Ribbon</i>	Should be entitled the Return of the Return. A budget game on a budget label. Not bad value and will while away an hour or two.	1.99
8	△ 13	RAVENSKULL <i>Blue Ribbon</i>	A classic and a bargain even at full price. This excellent arcade adventure will have you enthralled for days.	2.99
9	△ 11	GRAHAM GOOCH TEST CRICKET <i>Alternative</i>	Originally released by ASL, it is more suited to the budget label. Recommended if you are totally disheartened with the Test season.	1.99
10	△ 20	STORMCYCLE <i>Atlantis</i>	Save Earth from imminent invasion and disaster by finding five diodes, killing the enemy and beating the clock.	1.99
11	●	TURF FORM <i>Superior</i>	Another returning to the charts – after the good going for the racing season you may feel lucky. Test your skill all you have to lose is £1.99.	2.99
12	▽ 5	PREDATOR <i>Superior</i>	Here is your chance to take on the mantle of Schwarzenegger to rescue the diplomats and destroy the marauding alien.	9.99
13	▽ 4	GALAFORCE <i>Blue Ribbon</i>	One more from the Superior/Blue Ribbon deal to bring you the classics of yesteryear at a budget price. Well worth the money.	2.99
14	●	GOLF <i>Blue Ribbon</i>	Going back to the sporting theme, drive, putt and birdie your way through a variety of courses and obstacles.	1.99
15	●	REPTON 2 <i>Blue Ribbon</i>	Surfacing again, this is one of a variety of opportunities to obtain Repton 2 and complete the tale of the little green adventurer.	2.99
16	●	CITADEL <i>Blue Ribbon</i>	A classic of Ravenskull proportions and a great way to introduce anyone to games on the Electron. Superb.	2.99
17	●	INDOOR SOCCER <i>Alternative</i>	If you are tired of the outdoor variety it is probably time to go inside. Not the best football implementation though.	1.99
18	●	MINI OFFICE <i>Alternative</i>	Now available at a budget price this is a integrated package – a good introduction to more serious applications.	1.99
19	●	PERCY PENGUIN <i>Blue Ribbon</i>	Not quite in the league of Citadel or Ravenskull, but fun, nice looking and very enjoyable to play. At only £1.99 it's a bargain.	1.99
20	●	STEVE DAVIS SNOOKER <i>Blue Ribbon</i>	Yes he's back again – and if there is anyone out there who hasn't yet played this game, do so. A budget game at a budget price.	1.99

Product: Buffalo Bill's Wild West Rodeo Games
 Price: £9.95 (tape) £11.95 (disc)
 Supplier: Tynesoft, Addison Industrial Estate,
 Blaydon, Tyne & Wear NE21 4TE.
 Tel: 091-414 4611

TO say that Buffalo Bill's Rodeo Games is an immaculately programmed and superbly presented package would be an understatement – this game is a classic. Not only are the six events extremely playable, they are also crammed with sound effects and illustrated with some of the best colour displays I have seen on the Electron.

Up to four players can enjoy the events, the first being the **Trick Shooting**, a difficult test of hand-eye coordination. Superimposed on a desert background is a floating gunsight, the vertical and horizontal movement of which is under your control.

One by one, a series of cardboard cut-out characters begin to flip up with increasing regularity and you must knock them down again before the brief time limit expires and they fall automatically. Variety is provided with the inclusion of good guys who should not be gunned down and vultures that can be plugged for a handsome bonus.

The fun continues in true western style as you enter part two of this event. A lone character tosses bottles into the air which act as flying targets and a real test of marksmanship.

Each event is followed by a resounding *Yee-ha* and very impressive league table. Staying with the target practice theme, we move on to event number two – the **Knife Throwing**.

Following a dramatic increase in scale we are treated to the view of an Indian squaw strapped tightly to a rotating wheel as she trustingly waits for her partner to launch eight-inch, razor-sharp blades in her general direction. The tension builds as each blade thuds into the spinning wheel, surely your luck – or should it be hers? – can't hold out much longer. Finally the inevitable happens and the badly judged projectile elicits a scream from the unfortunate assistant.



Yeeee... Haaaaaa!

Calf Roping is the order of the day as we reach the half-way stage of Bill's Wild West extravaganza. An aerial view is used to follow the progress of galloping calf and pursuing cowboy. The trick is to ride alongside the animal and then throw a rope around its neck without taking a tumble yourself.

This is easily the most difficult event so far, since the mini steer has no intention of giving up peacefully and will try its best to unsaddle you – a technique at which it is most competent.

I found the **Bronco Riding** by far the briefest of the six events – especially when I was playing. Sat astride a fiercely bucking bronco, your sole objective is to stay in contact with your mount. An arrow system indicates the direction in which you are currently overbalancing, your job is to pound the key to move you in the opposite direction. It's not easy.

Steer Wrestling is similar in many respects to calf roping. A gallop at full speed followed by an athletic leap on to the charging steer and you are expected to pit your 12 stone frame against over a tonne of thrashing bone and muscle. No mean feat for Arnold Schwarzenegger, yet your fearless reviewer's keyboard bashing technique was more than man enough for the job.

In event number six you are called upon to retrieve a stagecoach that has been stolen by rogue Indians. By pummeling the Z and X keys you gallop towards the speeding vehicle with the intention of leaping aboard when alongside. Unfortunately the Indian on the roof has other ideas and continually

tosses the passengers' luggage in your path.

Once on the stagecoach you climb to the roof and slug it out with the renegade redskin. The loser is the one who falls from the still speeding coach.

All of the events consist of three separate rounds, often of increasing difficulty. A very welcome feature that Tynesoft implemented is the replay facility – at the end of the third round you are always offered an opportunity to play the complete event again.

Buffalo Bill's Wild West Rodeo Show is the best multi-event game to be released for the Electron this year. It is a product that further reinforces Tynesoft's mastery of this genre of game. Yee-ha!

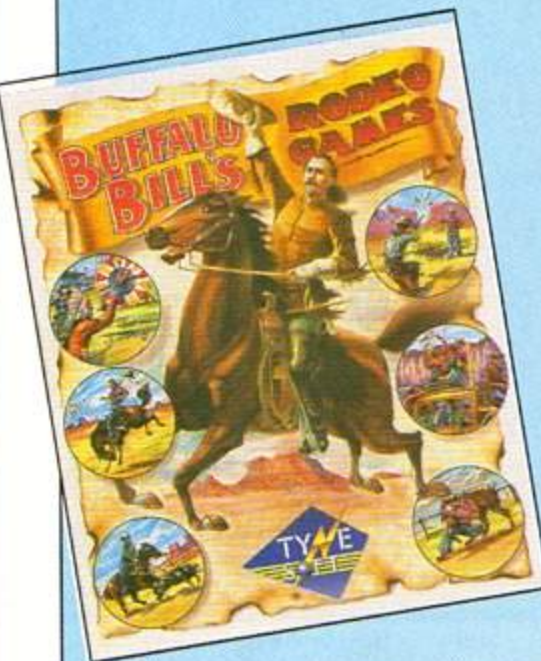
James Riddell

Second Opinion

Another in a long line of multi-part games from Tynesoft, and it's sure to be a winner. The variety of games, the superb graphics and addictive gameplay means you won't tire of this package as quickly as some of the cheaper offerings currently on sale.

Janice Murray

Graphics	9
Sound	9
Playability	9
Value for money	10
Overall	9



Product: Spooksville
Price: £2.99 (tape)
Supplier: Blue Ribbon Software, CDS House,
 Beckett Road, Doncaster DN2 4AD.
Tel: 0302 321134

IN Spooksville, you play the part of Gaston the Intrepid who is trying to find a spellbook stolen from a great magician many centuries ago by Count Dracula.

The spells can only be used every 500 years, and that time is just about due. The book is hidden in the town of Spooksville – so in you Gaston, jolly well go to face Frankenstein, Dracula and sundry other horrors.

This torrid scenario paves the way for another arcade adventure game in the style of that old favourite Citadel. The graphics and sound are also closely based on the older game.

Gaston can travel left and right, as well as up and down ropes and ladders. From time to time objects found may help solve the game. For example, the stake will kill Dracula and the barrel will enable Gaston to escape from Frankenstein's lair. Other objects include crosses, holy water, rope, a lamp, gold bars, fireballs, a rod and a sword.

A fairly comprehensive "what does what" list is given in the instructions. Essential to success are the ring – hidden in the crypt – and the scroll, one of the few items whose location and purpose is not revealed before you start.

Old time Citadel players will remember the ghostly cloaked figures which needed a magic spell fired between the eyes to remove them from screen. Spooksville has these, or similar figures, in abundance.

In fact, there is one in every room except the starting screen and all need to be shot smartly in order to survive. A strange feature of your weapon is that you must be moving when you fire it.

Its range is short so don't fire till you see the red of their eyes. Tall monsters can't be destroyed by the standard technique – it is essential to find the correct object to dispose of them.

This is yet another budget game which has not been written well on the Electron. If you can imagine playing Citadel with your feet stuck in syrup then that's what you've got here. Mind you, things are changed out of all recognition if you own a Slogger Turbo. Then the game is almost too fast, but certainly playable.

I would strongly commend the original Citadel as a far more interesting game, but if you've completed that Spooksville will do at a pinch.

Rog Frost

Second Opinion

This is another spin-off based on the highly successful Citadel. While not quite matching up to the original, it is nevertheless very enjoyable. If you like this sort of game then at only £2.99 it represents a bargain and will provide many hours of entertainment.

Roland Waddilove

Trivial touch

Product: Hi Q Quiz
Price: £2.99 (tape only)
Supplier: Blue Ribbon, CDS House, Beckett Road, Doncaster DN2 4AD.
Tel: 0302 321134

EVERY once in a while a software house produces something that is so out-dated and run-of-the-mill that you wonder why it ever bothered. Blue Ribbon has done this with its latest release, Hi Q Quiz.

Basically a budget version of Trivial Pursuit, the board consists of a wheel with four spokes, around which each of the two to four players move. Each segment on the wheel and spokes bears a symbol which indicates the type of question that you have to answer when you land on it – sport, sciences, history/art and natural history.

The questions vary in difficulty from easy: *What is the name given to a baby cat?* To relatively hard: *Where were the 1932 Olympics held?*

The questions are randomly selected from data files which don't seem to be large enough to prevent repetition – the same

questions keep turning up and the one about the venue of the 1960 Olympics has been asked in every game I've played.

There are four levels of play, the higher you select, the more questions you need to answer to win. Success goes to whoever answers the required number of questions in each category and then returns to the centre and gives the correct answer to a final randomly selected question.

You stop the roll of dice on screen by hitting the spacebar then use the cursor keys to move your marker. You can set a device to limit the time in which the questions have to be answered and there are segments which allow you to roll again if you land on them.

There are a few differences between Hi Q Quiz and Trivial Pursuit, but not many. For instance, you can't pass over a segment occupied by another player's marker and you can't pass through into the centre unless you roll the exact number needed. Even then you can go there only if you have answered enough questions to qualify for the final one.

The graphics are a bit squashed to make room for as many segments as possible, and

Haunting



Spooksville is similar to that old favourite, Citadel



as such the game looks cluttered. Sound is minimal – the rolling dice give a random toned chattering and you get one of two different noises depending on whether or not you answer a question correctly.

There is also a little jingle at the end when

the game declares the winner – and that's just about it.

To sum up, the game is fairly cheap, the whole thing takes just a few minutes to load in by tape and occasionally comes out with some tough questions. It is simple to play

and contains elements that would make it a fairly nice piece of educational software for the young.

However, it fails badly as a quiz for those with a reasonably high IQ and would only just make a passable magazine listing game. There isn't even a facility for entering the players' names. I can think of much better ways of spending three quid.

Desmond

Second Opinion

I was initially confused by this trivia quiz as the correct answer is always displayed on the screen following the question. The idea is that you ask your opponents the question and press Y or N depending on whether he or she answers correctly.

Once I had got the hang of it, I quite enjoyed it. Not as much fun as the board game, but still quite good family entertainment.

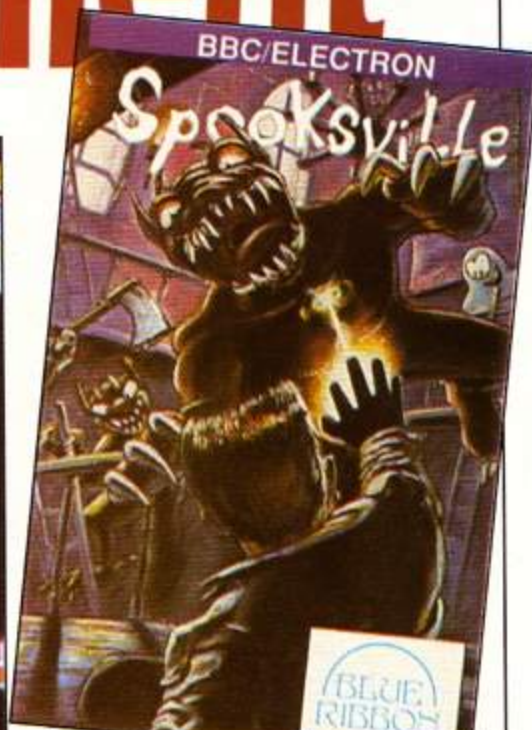
Janice Murray

Graphics	6
Sound	5
Playability	4
Value for money	6
Overall	5

Entertainment



Play is quite slow, and is much better with a Turbo



Graphics	7
Sound	5
Playability	6
Value for money	7
Overall	7

Electronic artistry

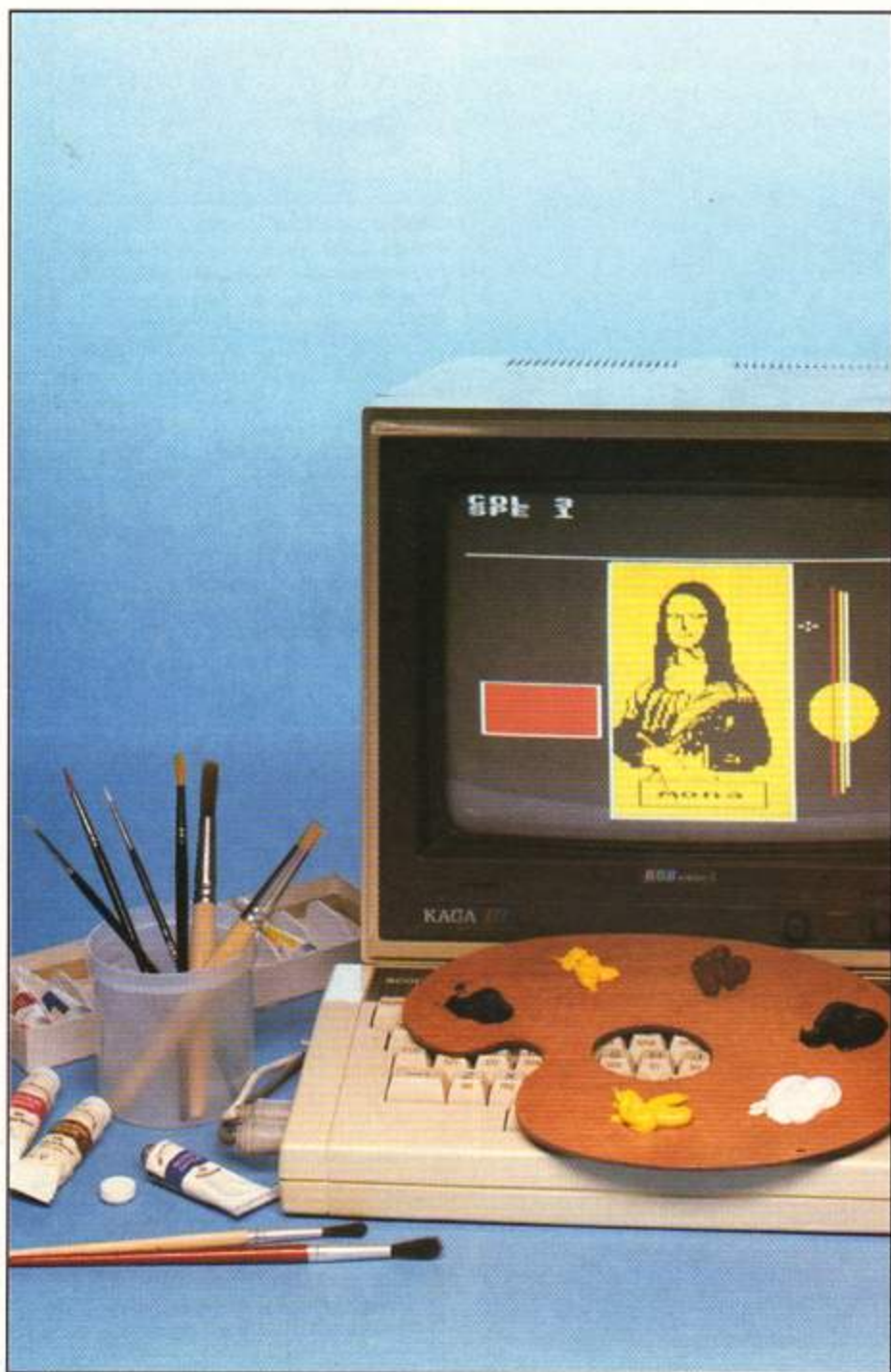
Show off your hidden talents with Stuart Bain's paint program

ELKPAINT is the most powerful art package available for the Electron and includes many features that have not been seen before in previous art software.

It was written after seeing the wide range of facilities available in Photon Paint running on the Commodore Amiga. Not wishing to be outdone, here's a rival package for the Electron.

Elkpaint runs in four colour Mode 5. The colours are chosen by pressing keys zero to three. The Z, X, * and ? keys move the cursor and there are six different speeds - set them by pressing Shift+1 (slow) to Shift+6 (fast). Both colour and speed can be changed at any time.

Rubberbanded lines can be drawn. Move the cursor to start position and press B. The line will then follow the cursor. Fix the line by



VARIABLES

X%,Y%	Cursor coordinates
col%	Colour
sp%	Speed
s%(24)	Table of sin values

```

10REM Elkpaint by Stuart Bain
20REM (c) Electron User
30ONERRORMODE6:REPORT:PRINT" a
t line ":ERL:END
40MODE5:PROCinit:MOVED,836:DRA
W1279,836:VDU24,0;0;1279;831;23,1
,0;0;0;0;
50PRINTTAB(0,0)"COL 3""SPE 1"
:PROCCurs(X%,Y%):PROCCscr(0)
60REPEATPROCmove:IFK%=66PROCba
nd ELSEIFK%=67PROCCirc ELSEIFK%=8
2PROCCrect
70IFK%=69PROCCellip ELSEIFK%=70
PROCCfill ELSEIFK%=87ORK%=81PROCCwi
pe
80IFK%=77PROCCzoom ELSEIFK%=80P
ROCCcut ELSEIFK%=65PROCCbrush
90IFK%=83PROCCscr(0)ELSEIFK%=85
PROCCscr(1)ELSEIFK%=84PROCCtext
100IFK%=76ORK%=75PROCCfile(K%-75
)
110PRINTTAB(0,3)SPC14:UNTIL0
120DEFPROCmove
130K%=INKEY0:*FX15
140IFK%>32ANDK%<39sp%=8*(K%-32)
:PRINTTAB(4,1);sp%DIV8ELSEIFK%>47
ANDK%<52col%=K%-48:PRINTTAB(4,0);
col%
150x%=X%:y%=Y%:x%=X%+(INKEY-98-
INKEY-67)*sp%:IFX%<0X%=0ELSEIFX%>
1279X%=1279
160Y%=Y%+(INKEY-105-INKEY-73)*s
p%DIV2:IFY%<0Y%=0ELSEIFY%>831Y%=8
31
170PROCCurs(x%,y%):PROCCurs(X%,
Y%)
180ENDPROC
190DEFPROCcurs(A%,B%)GCOL3,3:MO
VEAX-24,B%+12:VDU5,225,4:ENDPROC
200DEFPROCbp:SOUND1,-10,170,2:E
NDPROC
210DEFPROCband
220PRINTTAB(0,3)"RUBBER BANDING
":REPEATrx=X%:ry=Y%:GCOL3,3:PLO

```


Circles are simple. Move the cursor to the centre and press C. The dotted circle will follow the cursor. Press the spacebar to draw the circle and continue with another from the same centre, or press Return to draw it and exit circle mode.

To draw a rectangle press R to fix one corner then drag the rubberbanded box to the correct size. The spacebar fixes it in place and gets ready to start the next one, while Return draws it and exits rectangle mode.

A simple fill is accessed by pressing F. It fills until a non-background colour is found.

Now draw the zoom window in the top right-hand corner of the screen. Use the spacebar to draw. The cursor keys scroll the window. Press Return to exit Magnify mode.

A useful Undo facility is available. Press S

PROCEDURES	
band	Rubberband mode
circ	Circle mode
dots	Draw dotted circle
ellip	Ellipse mode
ell	Draw dotted ellipse
rect	Rectangle mode
box	Draw rectangle
fill	Fill area
wipe	Clear screen

band	Rubberband mode
circ	Circle mode
dots	Draw dotted circle
ellip	Ellipse mode
ell	Draw dotted ellipse
rect	Rectangle mode
box	Draw rectangle
fill	Fill area
wipe	Clear screen

Note that this routine only copies the pixels from one spot to another, so don't overlap the boxes or the screen will be corrupted. It

Command Key	Summary
Z X * ?	Move cursor
0 - 3	Choose colour
Shift+1-6	Choose speed
B	Rubberband
C	Circle
E	Ellipse
R	Rectangle
A	Airbrush
F	Fill
S	Store screen
U	Swap screens
T	Text
P	Cut+paste
Q+W	Clear screen
K	Save screen
L	Load screen
M	Magnify
Spacebar	Confirm/fix
Return	Exit drawing mode
Cursors	Scroll magnified view

A large chunk of memory is used for storing the alternate screen (8k) so the program may be tight on memory if an ADFS is fitted, though there is plenty of memory with a tape system.

```

400REPEATPROCbox:PROCmove:PROCB
OX
410UNTILINKEY-990RINKEY-74:IFIN
KEY-74ret%1ELSEret%0
420PROCcurs(X%,Y%):GCOLOR,col%:P
ROCbox:PROCcurs(X%,Y%):PROCBp:UNT
ILret%:ENDPROC
430DEFPROCbox:MOVERx%,ry%:DRAW
%,ry%:DRAWX%,Y%:DRAWrx%,Y%:DRAWrx
%,ry%:ENDPROC
440DEFPROCfill
450PRINTAB(0,3)"FILL":PROCcurs
(X%,Y%):Z%:=POINT(X%,Y%):GCOLOR,col
%:GCOLOR,Z%+128
460PROCflood(X%,Y%,4):PROCflood
(X%,Y%-4,-4):PROCcurs(X%,Y%):GCOL
0,128:PROCBp:ENDPROC
470DEFPROCflood(A%,B%,D%)
480IFPOINT(A%,B%)<>Z%ENDPROC
490REPEATPLOT77,A%,B%:B%=B%+D%:
UNTILPOINT(A%,B%)<>Z%:PROCflood((
18314*8+!8310)DIV2AND$FFFF,B%,D%
):ENDPROC
500DEFPROCwipe:IFINKEY-34ANDINK
EY-17CLG:PROCbp:PROCcurs(X%,Y%)
510ENDPROC
520DEFPROCzoom
530PRINTAB(0,3)"ZOOM":PROCcurs
(X%,Y%):VDU26:GCOLOR,3:MOVE752,102
3:DRAW752,847:MOVE1136,1023:DRAW
136,847
540PROCpixel:A%=5:B%=5:PROCcro:
REPEATK%:=GET:PROCcro:*FX15
550IFK%=90ANDAX%>0AX%=A%-1ELSEIFK
%<88ANDAX%<10AX%=A%+1ELSEIFK%=58AND
B%<10B%=B%+1ELSEIFK%=47ANDB%>0B%=
B%-1
560IFK%>47ANDK%<52col%:=K%-48:PR
INTTAB(4,0):col%ELSEIFK%=32GCOLOR,
col%:MOVE768+A%*32,863+B%*16:VDU5
,224,4:PLOT69,rx%+A%,ry%+B%*4
570IFK%=136X%=X%-24ELSEIFK%=137
X%=X%+24ELSEIFK%=138Y%=Y%-12ELSEI
FK%=139Y%=Y%+12

```

```

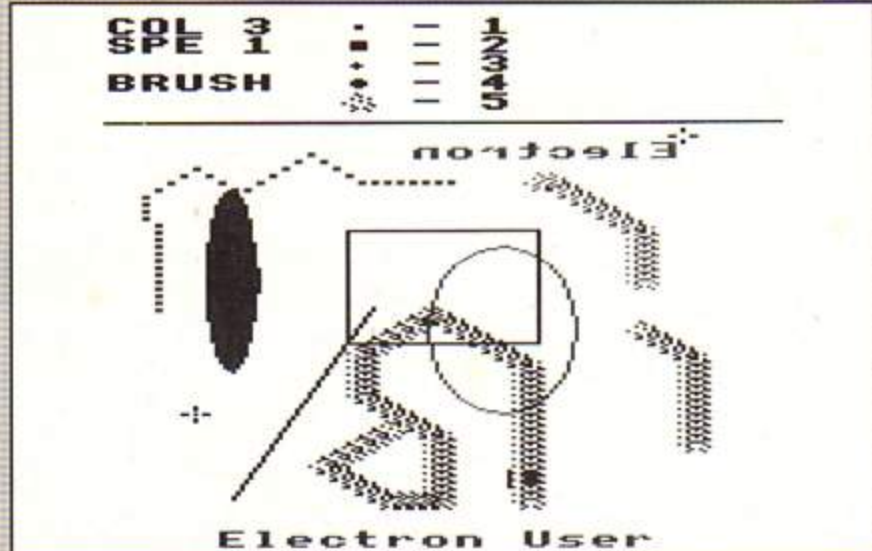
580IFK>135ANDK<140PROCp1xel:A
%=5:B%=5
590PROCcro:UNTILINKEY-74:VDU24,
752;847;1136;1023;16,24,0;0;1279;
831;:PROCcurs(X%,Y%):PROCbp:ENDPR
OC
600DEFPROCp1xel:rx%=X%-40:ry%=Y
%-20:IFrx%<0rx%=DELSEIFrx%>1192rx
%=1192
610IFry%>791ry%=791ELSEIFry%<0r
y%=0
620VDU5:FORI%=0TO10:FORJ%=0TO10
:GCOL0,POINT(rx%+I%*8,ry%+J%*4):M
OVE768+I%*32,863+J%*16:VDU224:NEX
T,:ENDPROC
630DEFPROCcro:GCOL3,3:MOVE768+3
2*A%,863+16*B%:VDU5,226,4:ENDPROC
640DEFPROCcut
650PRINTTAB(0,3)"CUT+PASTE":rx%
=X%:ry%=Y%:PROCbox
660REPEATPROCbox:PROCmove:PROCb
ox:UNTILINKEY-99:PROCcurs(X%,Y%):
IFX<rx%a%<X%:X%=rx%:rx%=a%
670IFY%<ry%a%=Y%:Y%=ry%:ry%=a%
680C%=rx%:D%=ry%:E%=X%-rx%:F%=Y
%-ry%:PROCcurs(X%,Y%):REPEATPROCb
ox:PROCmove:rx%=X%-E%:ry%=Y%-F%:P
ROCbox:UNTILINKEY-74:PROCbox
690PROCcurs(X%,Y%):REPEATa%=GET
:UNTILa%=320RA%=720RA%=860RA%=82:
step%=8
700IFA%=82PROCrotate:cos=COSRAD
an%:sin=SINRADan%:step%=4:IF(an%>
40ANDan%<140)OR(an%>220ANDan%<320
)sin=sin*2
710FORI%=0TOE%STEPstep%:FORJ%=0
TOF%STEPstep%DIV2:GCOL0,POINT(C%+
I%,0%+J%)
720IFA%=32PLOT69,rx%+I%,ry%+J%EL
SEIFA%=72PLOT69,rx%+E%-I%,ry%+J%
ELSEIFA%=86PLOT69,rx%+I%,ry%+F%-J
%ELSEPLOT69,rx%+I%*cos-J%*sin,ry%

```

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```
+sin*IXDIV4+JZ*cos
73ONEXT,:PROCCURS(X%,Y%):PROCbp
:ENDPROC
740DEFPROCrotate:anX=0:PROcline
750REPEATIX=anX+10*(INKEY-67-IN
KEY-98):IFIX<0IX=350ELSEIFIX>350I
X=0
760IFIX<>anXPROcline:anX=IX:PRO
cline
770UNTILINKEY-99:PROcline:ENDPR
OC
780DEFPROCline:MOVErxX+60*COSRA
DanZ,ryX+60*SINRADanX:DRAWrxX,ryX
:DRAWrxX+10*COSRAD(anX+90),ryX+10
*SINRAD(anX+90):ENDPROC
790DEFPROCbrush
800FORIX=0TO4:PRINTTAB(7,IX)CHR
$(227+IX)" - ";IX+1:NEXT:PRINTTAB
(0,3)"BRUSH":REPEATIX=GET-49:UNTI
LIX>=0ANDIX<5
810REPEATPROCmove:IFINKEY-99PRO
CCURS(X%,Y%):GCOL0,colX:MOVEX-24
,YX+12:VDU5,227+IX,4:PROCCURS(X%,
Y%)
820UNTILINKEY-74:FORIX=0TO4:PRI
NTTAB(7,IX)SPC8:NEXT:PROCbp:ENDPR
OC
830DEFPROCtext
840PRINTTAB(0,3)"TEXT":AS="":rx
X=X-24:ryX=YX+12
850REPEATREPEATIX=GET:UNTILIX>3
1ANDIX<128ORIX=13:PROCCURS(X%,Y%)
:MOVErxX,ryX:VDU5:PRINTAS
860IFIX>31ANDIX<127ANDIX<1216AS
=AS+CHR$(IX-X+64)ELSEIFIX=127AN
DAS<>"AS=LEFT$(AS,LEN(AS)-1):X=X-
64
870MOVErxX,ryX:PRINTAS:PROCCURS
(X%,Y%):UNTILIX=13
880GCOL0,colX:MOVErxX,ryX:VDU5:
PRINTAS:VDU4:PROCbp:ENDPROC
890DEFPROCfile(IX)
```



```
900VDU28,0,4,19,0,12:INPUT"Fil
ename ?"AS:IFAS<>"PROCf12(IX)
910CLS:PRINT"COL ";colX"SPE ";
spX/8:PROCbp:ENDPROC
920DEFPROCf12(IX)
930PRINT":IFIXOSCLI"LOAD "+AS+
" 5F80"ELSEOSCLI"SAVE "+AS+" 5F80
8000"
940ENDPROC
950DEFPROCscr(CX)PROCCURS(X%,Y%
):!870=85F80:!872=SX:AX=CX:CALLQ%
:PROCCURS(X%,Y%):PROCbp:ENDPROC
960DEFPROCinit:*FX229,1
970DIMS8320,sX(24):FORIX=1TO25
:sX(IX-1)=100*SINRAD(IX*18):NEXT:
*FX4,1
980VDU23,224,240,240,240,240,0;
```

```
0;23,225,16,16,0,198,0,16,16,0,23
,226,0,96,96,0,0;0;23,227;0;24,24
;0;0;
990VDU23,228,0,0,60,60,60,60,0;
23,229,0,0,0,16,56,16;0;23,230,0,
0,24,60,60,24,0;23,231,16,8,34,8,
130,33,20,34
1000XX=0:YX=0:spX=8:colX=3:FORIX
=0TO25STEP2:PX=8900:COPTIX
1010.QXTAX:LDY#0:.s1:LDA(870),Y:
CPX#0:BNEsw:STA(872),Y:SEC:BCS2:
.sw:PHA:LDA(872),Y:STA(870),Y:PLA
:STA(872),Y
1020.s2:INC870:BNEs3:INC871:.s3:
INC872:BNEs4:INC873:.s4:LDA871:CM
P#80:BNE1:RTS:JNEXT:ENDPROC
>*SP00L
```

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user

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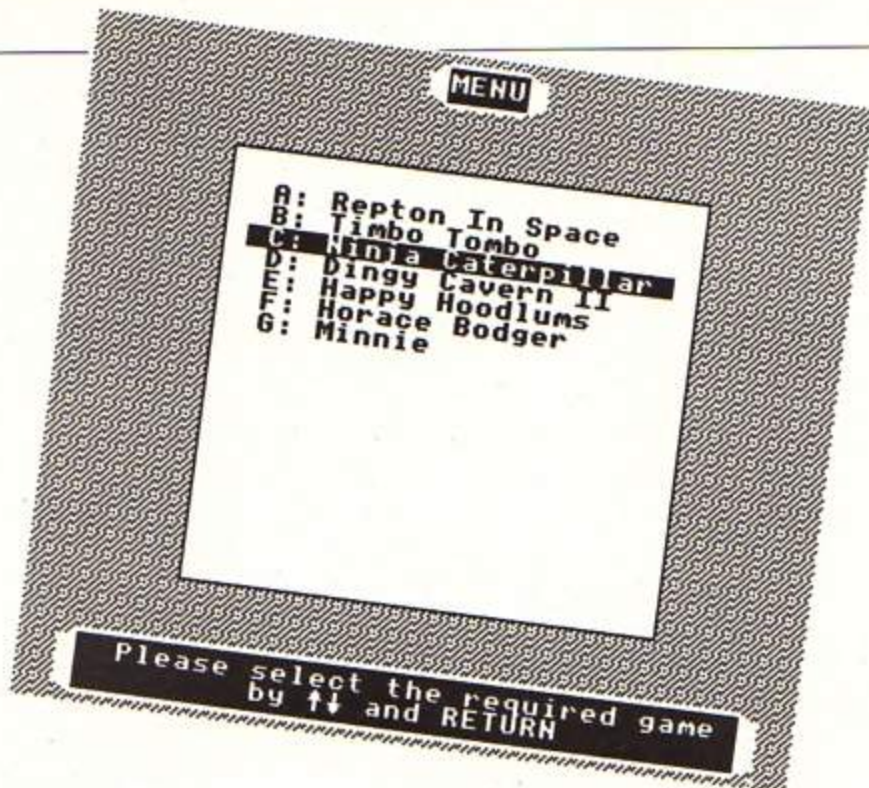
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EXCLUSIVE



TO ORDER PLEASE USE THE FORM ON PAGE 45

Should you fancy a tasty dish...



DISC MENU is a user friendly menu system designed to make the process of loading and running disc files as easy as possible. The utility is written in Basic, but you can load Basic, machine code or even *EXEC Ascii text files.

To set up the menu, enter the Basic listing below. The data statements at the end will need to be altered slightly for each disc you intend putting the menu on. Line 2020 holds the number of items on the menu, and the following lines hold the information for each file.

The first item is the index letter on the menu, the second is the text which is printed on the menu screen and the third is the

Steve Wyeth has cooked up this very attractive disc menu program

method of loading, for instance, CHAIN or *RUN. The fourth item is the filename and the full pathname of the file is required with *EXEC and *RUN.

The last item specifies the screen mode to change to when the program is loaded - for instance, some games require Mode 6. If a mode change is required M followed by the mode number is used, like M6 for Mode 6.

Save the menu program onto your disc and then enter:

```
*OPT4,3
*BUILD !BOOT
CHAIN "MENU"
```

Press Escape after the last line. Now you can press Shift+Break to run the menu. The cursor up and down keys move the highlight up and down the list of files.

The letter keys A to Z move the highlight immediately to the specified item if such a letter is on the menu. The Return key selects the currently highlighted program then loads and runs it.

```
10 REM Disc Menu
20 REM By Steve Wyeth
25 REM (c) Electron User
30 MODE 4
40 *FX 4,1
50 REM *FX 229,1
60 PROC_variable_definitions
70 PROC_fill_arrays
80 PROC_print_screen
90 PROC_print_menu_items
100 REPEAT
110 PROC_print_current_option
120 PROC_accept_input_from_user
130 IF flag = FALSE THEN PROC_delete_current_option
140 UNTIL flag = TRUE
150 *FX 4,0
160 PROC_load_game
170 END
180 :
190 DEF PROC_variable_definitions
200 blue = 4
210 white = 7
220 background = 0
230 foreground = 1
240 current_entry = 1
250 READ menu_entries
260 DIM position$(menu_entries)
270 DIM entry$(menu_entries)
280 DIM loading$(menu_entries)
290 DIM filename$(menu_entries)
300 DIM note$(menu_entries)
310 pos = 0
320 old_entry = 1
330 flag = FALSE
340 entry_flag = FALSE
350 User_Input$ = ""
360 ENDPROC
370 :
380 DEF PROC_fill_arrays
390 FOR loop% = 1 TO menu_entries
400 READ position$(loop%)
410 READ entry$(loop%)
420 READ loading$(loop%)
430 READ filename$(loop%)
440 READ note$(loop%)
450 NEXT loop%
460 ENDPROC
470 :
480 DEF PROC_print_screen
490 VDU 19,background,blue;0;
500 VDU 19,foreground,white;0;
510 PROC_character_definitions
520 VDU 23,8202;0;0;0;
530 PROC_print_background
540 PROC_pretty_border(584,1008,4)
550 MOVE 584,992
560 PRINT "MENU"
570 VDU 4
580 COLOUR 129
590 COLOUR 0
600 PROC_rectangle(250,200,782,650)
610 PROC_pretty_border(96,108,3)
620 PROC_pretty_border(96,76,34)
630 PRINTTAB(3,29);" Please select the required game "
640 PRINT TAB(5,30);SPC(7);"by ";CHR$(130);CHR$(131);" and RETURN"
650 GCOL 0,1
660 PLOT 69,1184,72
670 PLOT 69,1184,76
680 ENDPROC
690 :
700 DEF PROC_character_definitions
710 REM Up Arrow
720 VDU 23,130,24,60,60,126,24,24,24
730 REM Down Arrow
740 VDU 23,131,24,24,24,126,60,60,24
750 REM Background Character
760 VDU 23,132,146,36,73,146,36,73,146,36
770 ENDPROC
780 :
790 DEF PROC_print_background
800 FOR loop%=0 TO 31
810 PRINT TAB(0,loop%);STRING$(40,CHR$(132));
820 NEXT loop%
830 VDU 5
840 MOVE 0,28
850 PRINT STRING$(40,CHR$(132))
```

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```

860 ENDPROC
870 :
880 DEF PROC_pretty_border(X_Co
_ord%,Y_Co_ord%,String_Length%)
890 GCOL 0,0
900 Y_Adjustment%=Y_Co_ord%-64

910 X_Adjustment%=X_Co_ord%+Str
ing_Length%*32
920 MOVE X_Co_ord%,Y_Co_ord%
930 MOVE X_Co_ord%,Y_Co_ord%-16

940 PLOT 85,X_Co_ord%-32,Y_Co_o
rd%-16
950 PLOT 85,X_Co_ord%-32,Y_Co_o
rd%-48
960 MOVE X_Co_ord%,Y_Co_ord%-48

970 PLOT 85,X_Co_ord%,Y_Co_ord%
-16
980 MOVE X_Co_ord%,Y_Co_ord%-48

990 MOVE X_Co_ord%-32,Y_Co_ord%
-48
1000 PLOT 85,X_Co_ord%,Y_Co_ord%
-64
1010 MOVE X_Adjustment%,Y_Co_ord
%
1020 MOVE X_Adjustment%,Y_Co_ord
%-16
1030 PLOT 85,X_Adjustment%+32,Y_
Co_ord%-16
1040 PLOT 85,X_Adjustment%+32,Y_
Co_ord%-48
1050 MOVE X_Adjustment%,Y_Co_ord
%-48
1060 PLOT 85,X_Adjustment%,Y_Co_
ord%-16
1070 MOVE X_Adjustment%,Y_Co_ord
%-48
1080 MOVE X_Adjustment%+32,Y_Co_
ord%-48
1090 PLOT 85,X_Adjustment%,Y_Co_
ord%-64
1100 MOVE X_Co_ord%,Y_Co_ord%
1110 MOVE X_Co_ord%,Y_Adjustment
%
1120 PLOT 85,X_Adjustment%,Y_Co_
ord%
1130 PLOT 85,X_Adjustment%,Y_Adj
ustment%
1140 GCOL 0,1
1150 MOVE X_Co_ord%,Y_Co_ord%-8
1160 MOVE X_Co_ord%,Y_Adjustment
%+8
1170 PLOT 85,X_Adjustment%,Y_Co_
ord%-8
1180 PLOT 85,X_Adjustment%,Y_Adj
ustment%+8
1190 GCOL 0,0
1200 ENDPROC
1210 :
1220 DEF PROC_rectangle(X_Co_ord
%,Y_Co_ord%,Width%,Height%)
1230 VDU 24,X_Co_ord%,Y_Co_ord%,
X_Co_ord%+Width%,Y_Co_ord%+Height
%
1240 CLG
1250 VDU 26
1260 GCOL 0,1
1270 MOVE X_Co_ord%,Y_Co_ord%
1280 DRAW X_Co_ord%,Y_Co_ord%+He
ight%
1290 DRAW X_Co_ord%+Width%,Y_Co_
ord%+Height%
1300 DRAW X_Co_ord%+Width%,Y_Co_
ord%
1310 DRAW X_Co_ord%,Y_Co_ord%
1320 ENDPROC
1330 :
1340 DEF PROC_print_menu_items
1350 COLOUR 1
1360 COLOUR 128
1370 FOR loop% = 1 TO menu_entri
es
1380 PRINT TAB(10,loop%+6);posit
ion$(loop%);": ";entry$(loop%)

```

```

1390 NEXT loop%
1400 ENDPROC
1410 :
1420 DEF PROC_print_current_opti
on
1430 COLOUR 0
1440 COLOUR 129
1450 PRINT TAB(9,current_entry+6
);": ";position$(current_entry);":
";entry$(current_entry);
1460 pos = POS
1470 FOR loop% = pos TO 30
1480 PRINT " ";
1490 NEXT
1500 ENDPROC
1510 :
1520 DEF PROC_accept_input_from_
user
1530 *FX 15
1540 entry_flag = FALSE
1550 User_Input$ = ""
1560 REPEAT
1570 User_Input$=INKEY$(20)
1580 PROC_validate_input
1590 UNTIL entry_flag = TRUE
1600 old_entry = current_entry
1610 IF User_Input$ = CHR$138 TH
EN current_entry = current_entry
+1
1620 IF User_Input$ = CHR$139 TH
EN current_entry = current_entry
-1
1630 IF User_Input$ = CHR$13 THE
N flag = TRUE
1640 IF (ASC(User_Input$)-64)>0
AND (ASC(User_Input$)-64)<=menu_e
ntries THEN current_entry = (ASC(
User_Input$)-64)
1650 IF User_Input$ = CHR$138 AN
D (current_entry > menu_entries)
THEN current_entry = 1
1660 IF User_Input$ = CHR$139 AN
D (current_entry < 1) THEN curren
t_entry = menu_entries
1670 ENDPROC
1680 :
1690 DEF PROC_validate_input
1700 IF User_Input$=CHR$139 OR U
ser_Input$=CHR$138 OR User_Input$
=CHR$13 THEN entry_flag=TRUE
1710 IF (ASC(User_Input$)-64)>0
AND (ASC(User_Input$)-64)<=menu_e
ntries THEN entry_flag = TRUE
1720 ENDPROC
1730 :

```

```

1740 DEF PROC_delete_current_opt
ion
1750 COLOUR 1
1760 COLOUR 128
1770 PRINT TAB(9,old_entry+6);":
";position$(old_entry);": ";entry
$(old_entry);
1780 pos = POS
1790 FOR loop% = pos TO 30
1800 PRINT " ";
1810 NEXT
1820 ENDPROC
1830 :
1840 DEF PROC_load_game
1850 PROC_check_notes
1860 IF loading$(current_entry)
= "CHAIN" THEN CHAIN filename$(cu
rrent_entry)
1870 IF loading$(current_entry)
= "EXEC" THEN OSCLI("EXEC" + fil
ename$(current_entry))
1880 IF loading$(current_entry)
= "RUN" THEN OSCLI("RUN" + filen
ame$(current_entry))
1890 ENDPROC
1900 :
1910 DEF PROC_check_notes
1920 IF INSTR(note$(current_entr
y),"M") = 1 THEN VDU 22,VAL(MID$(
note$(current_entry),2,1))
1930 ENDPROC
1940 :
1950 REM *****
1960 REM ** Data Area **
1970 REM *****
1980 REM :
1990 REM OSCLI (e.g. *RUN) calls
need
2000 REM full pathname including
drive
2010 REM :
2020 DATA 7
2030 DATA A,Repton In Space,CHAI
N,REPTILE,XX
2040 DATA B,Timbo Tombo,*EXEC,:2
.!BOOT,XX
2050 DATA C,Ninja Caterpillar,*R
UN,:0.NINJ,XX
2060 DATA D,Dingy Cavern II,CHAI
N,DINGY,M6
2070 DATA E,Happy Hoodlums,*EXEC
,:2.HELLO,M6
2080 DATA F,Horace Bodger,CHAIN,
HORACE,XX
2090 DATA G,Minnie,CHAIN,Min,XX

```



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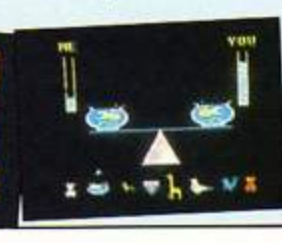
NURSERY RHYMES

5

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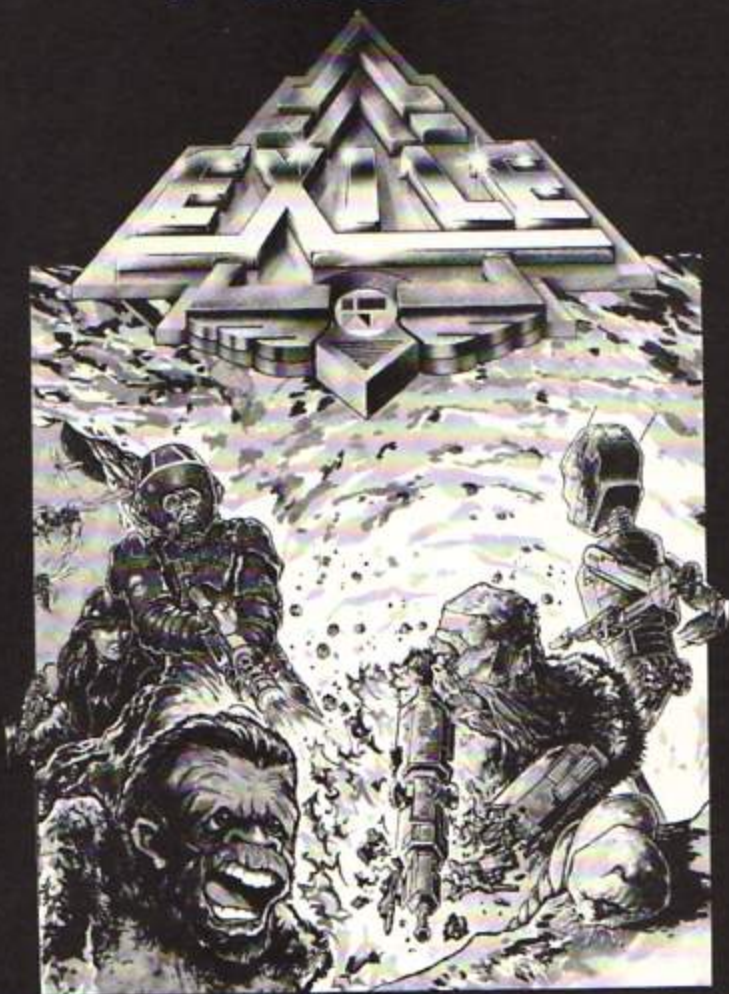
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ESCAPE FROM



LETTERS have been flooding in requesting help with that highly entertaining but difficult Superior Software game, *Exile*. Escaping from the central cavern and collecting the weapon seem to be causing a few problems.

Thanks to Leo McCann of Streatham, London, we can now help all those readers who've been scratching their heads in front of their Electron over the last few months. Before entering the cave complex go to the spaceship's undercarriage on the surface after getting the grenade from the bush on the right. There should be a series of red and yellow hatches above you.

Hold down the full boost thrust key and you will hit the cannon above, making it fly into the air. Keep the thrust keys pressed and when the cannon lands on your head move to the left. You should now have entered the spaceship.

Collect the grenade and shift the cannon to your left. Leave through the hatch. Fly over the top of the ship to a cabin with a horizontal door. Drop a grenade on the right-hand edge at the end of the door and move well away from the blast. Both the grenades inside the cabin should be intact, so pick them up and blast the door into the cavern.

Go up the diagonal tunnel and descend the vertical one. Enter the tunnel on your left and grab a grenade which is placed high up on the wall. Beware of the wasps. It is best to remember the location outside the wasp room and teleport out once you have the grenade safely in your pocket.

Enter the central cavern, where you will find a little cabin with a robot, a gun and a teleporter. Drop a grenade on the ledge below the door, but be careful as there is a bird here.

The robot will now be after you. Try to get into the cabin and collect the gun (if it hasn't been moved). Turn on the teleporter and lure the robot into it, which is easier said than done. Leave the teleporter on. Shoot the bird about 15 times and it will turn into a fireball.

To get out of the cavern go down to a bush with a pack of annoying monkeys. You will find a blue and yellow hatch to the left. Go through it, move to your left and up into a room which holds a wasp's nest and an oversized urn.

Fly in and take the urn. It is too big to be stuffed into your pocket, so you can't teleport with it. The next task is difficult and frustrating. Walk forward towards the door until you are in front of the nest. The wasps come out when the door closes.

Jump up and throw the urn out of the door, then teleport out. Collect the urn and go out of the hatch and leave it on the ground to the west of the hatch. Now you must collect a key.

Switch off the teleporter in the robot's cabin. Press R inside the cabin and fly out so that the robot follows you. Press T, switch on the teleporter, and get in it.

Quickly fly up to a hole in the ceiling, avoiding the flock of birds. Press R and slowly fly out. Hold down the downthrust and pickup buttons and collect the key. Press T and go back to the central cavern.

There is another grenade to collect here. Go to the large east wall of the cavern, fly down and take the grenade that is stuck in the floor by the gun. Return to collect your urn.

Travel west and drop it in the water to fill it up. Any sudden movement will upset it, calling for a refill. Go west to a hatch above a fire. Enter the room, leaving the urn in the middle of the door. Go to the monkey bush and fly over the hatch into a small chamber.

You will hear a door open. Lure a monkey into this chamber by shooting one. Teleport back to the door with urn and the door will open so you can get the RCD. Store it and retrieve your urn; leave it in a safe place.

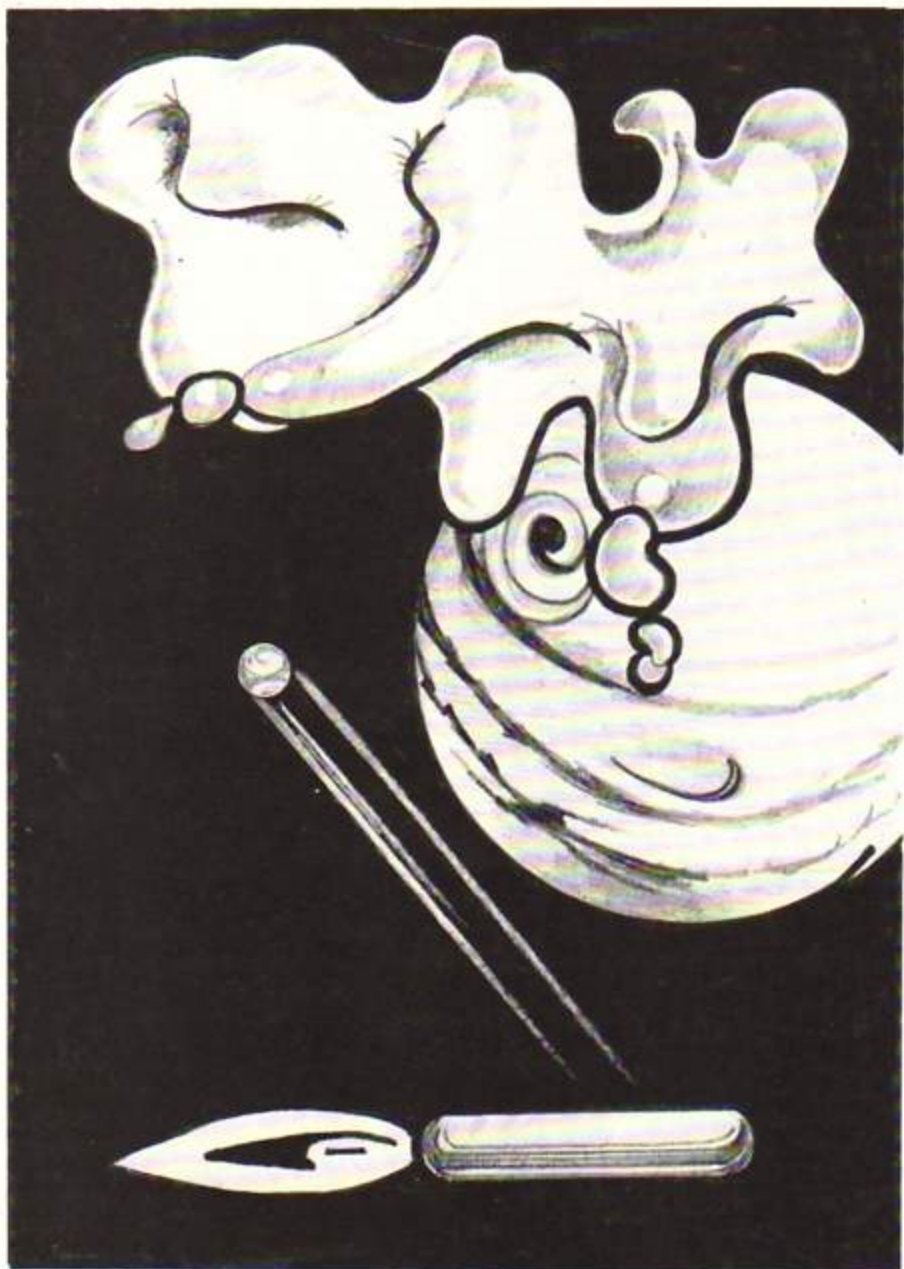
Now go to the entrance to the cave complex. Kill the funny round creatures, which only need to be shot once. Hold the RCD and aim it at the door next to their nest. Use it, then store it.

Throw a grenade inside the door and close it. The robot should blow up or be blown back into the cave. Fly through the cave into an alcove containing a bed, avoiding the other robot's fire. Lie on the bed, then aim your gun down and shoot so it moves. Under the bed is a secret manhole by the wall. Climb down it. Now you will be in a circular room.

Fly up and aim your gun at a button on the wall. Shoot it. A robot will probably appear with more round creatures. Shoot them and get the robot to go into the west teleporter.

Aim your fire at an icon you can see on a ledge between the teleporters. Keep shooting it so it gets blown back into the teleporter. Go around and follow it in by using that teleporter. Get the icon.

That should be enough information to get you well into the game. Have fun!



Going for a spin

Try this addictive but frustrating bat 'n' ball game by the inventive Nicholas Jameson

SPINNING Frustration is a variation on the old arcade game Breakout. In this clone of the classic the object is to knock out all the blocks of fungus at the top of the screen with a spinning ball which bounces around at high speed.

The ball is trapped and can't get away,

but if it hits the wall at the bottom of the screen directly after hitting a block the fungus grows and you lose some of the bonus points available.

You can prevent this from happening by hitting the ball back up the screen with the bat, which you can move left and right at the bottom of the screen.

You score points for knocking out fungus blocks and a bonus is available. However, the game will be over if your bonus falls to zero. Also if the fungus gets down to the same level as your bat you lose.

Part of the game is written in machine code for extra speed and smooth animation

```

10 REM Spinning Frustration
20 REM By Nicholas Jameson
30 REM (c) Electron User
40 REM
50 *FX200,1
60 MODE4:VDU23,1,0;0;0;0;
70 PROCtitle
80 PROCscores
90 PROCassemble
100 CLS:VDU19,1,7;0;
110 REPEAT
120 PROCinstruct
130 MODE5:VDU23,1,0;0;0;0;
140 PROCgame
150 MODE4:VDU23,1,0;0;0;0;
160 PROCreport
170 IFIX=0 GOT0130
180 UNTILO
190 REM High scores
200 DATA Fred,Jim,Sheila,User,E
    lectron,Nick,Tim,Mick,Andy,Bruno
210 REM Graphics data
220 DATA1,3,112,112,112,3,1,0,8
    ,12,224,224,224,12,8,0
230 DATA1,33,112,52,22,3,1,0,8,
    12,14,134,194,192,8,0
240 DATA16,18,22,22,22,18,16,0,
    128,132,134,134,134,132,128,0
250 DATA1,3,22,52,112,33,1,0,8,
    192,194,134,14,12,8,0
260 DATA7,225,225,225,225,225,2
    24,0
270 REM Data for tune
280 DATA80,76,72,68,255,80,255,
    100,255,116,255,116,108,108,104,1
    08,108,100,96,100,100,96,92,96,96
    ,88,84,88,80,76,72,68,80,255,100,
    255,68,64,60,60,255,80,255,96,255
    ,96,88,84,88,80,76,72,68,255,52,2
    55,32,255,52,68
290 DATA80,76,68,60,255,48,255,
    32,255,48,60,99
300 DEFPROCassemble
310 FORbyte=0TO71
320 READdata
330 byte?&C00=data
340 NEXT
350 byte=0
360 REPEAT
370 READdata
380 IFdata=99 GOT0420
390 byte?&4900=data
400 byte=byte+1
410 UNTILO
420 FORpass=0TO2STEP2
430 PX=&5000
440 COPTpass
450 .init \initialisation and s
    ummary
460 LDA#&50:STA#70 \ball positi
    on
470 LDA#&71:STA#71
480 LDA#0:STA#72 \balls old pos
    ition
490 LDA#&80:STA#73
500 \ &74 and &75 - reserved fo
    r checking
510 LDA#&88:STA#76 \batters pos
    ition
520 LDA#&7B:STA#77
530 LDA#0:STA#78 \batters old p
    osition
540 LDA#&80:STA#79
550 LDA#0:STA#7C \location for
    data for ball

```

so take care when entering the listing. The interrupt-driven music which accompanies the game can be turned off by pressing Q.

CONTROLS

Z	Left
X	Right
Return	Freeze game
*	Unfreeze game
?	Abort game
Q	Sound off
S	Sound on


```

560 LDA#8C:STA#7D
570 LDA#2:STA#C4A \direction of
ball
580 LDA#0:STA#7A \pointer for I
RQ driven music
590 LDA#849:STA#7B
600 LDA#16:STA#C4B \counter for
IRQ driven music
610 LDA#1:STA#C48:STA#C49 \posi
tion of ball and counter for spin
ning rate
620 LDY#8:LDY#0:LDY#214:JSR#FFF
4
630 LDA#1:STA#C52
640 LDA#86:STA#BE \counter for
blocks left
650 LDA#1:STA#8F
660 LDA#0:STA#C4C \score
670 LDA#0:STA#C4D
680 LDA#88:STA#C53 \bonus
690 LDA#E13:STA#C54
700 LDA#0:STA#C4E \dead yet?
710 LDY#service AND #FF
720 LDY#service DIV #100
730 SEI
740 STX#204
750 STY#205
760 CLI
770 LDA#8A0:STA#7E
780 LDA#5F:STA#7F
790 .blockloop1
800 LDY#F0
810 .blockloop2
820 TXA:CLC:ADC#7E:STA#80
830 LDA#7F:ADC#0:STA#81
840 LDY#7
850 .blockloop3
860 LDA#C40,Y:STA(880),Y
870 DEY:BPLblockloop3
880 TXA:SEC:SBC#8:TAX:BNEblockl
oop2
890 LDA#7F:CMP#86E:BEQendsub
900 LDA#7E:CLC:ADC#840:STA#7E
910 LDA#7F:ADC#1:STA#7F
920 JMPblockloop1
930 .endsub
940 LDA#8A0:STA#7E \location fo
r fungus to grow
950 LDA#86C:STA#7F
960 JMPml
970 .service
980 TYA
990 PHA
1000 TXA
1010 PHA
1020 LDA#C52:BEQoldvector
1030 INC#C4B:LDY#C4B:CMP#19:BNEo
ldvector
1040 LDA#0:STA#C4B
1050 .sound
1060 LDA#0:STA#C4B
1070 LDY#0:LDY(87A),Y
1080 LDA(87A),Y:TAX:LDY#213:JSR#
FFF4
1090 LDA#21:LDY#5:JSR#FFF4
1100 LDA#7:JSR#FFEE
1110 LDA#7A:CLC:ADC#1:STA#7A:CMP
#71:BNEgap
1120 LDA#0:STA#7A
1130 .gap
1140 LDA(87A),Y:CMP#255:BNEoldve
ctor
1150 LDA#236:STA#C4B
1160 LDA#7A:CLC:ADC#1:STA#7A
1170 .oldvector
1180 PLA
1190 TAX
1200 PLA
1210 TAY
1220 JMP#DB47
1230 .ml
1240 JSRdirection
1250 LDA#C4C:STA#C4F
1260 JSRprint
1270 JSRbatter
1280 LDA#881:LDY#8F:LDY#FF:JSR
&FFF4:TYA:BEQon
1290 LDA#0:STA#C52
1300 .on
1310 LDA#881:LDY#8AE:LDY#FF:JSR
&FFF4:TYA:BEQabort
1320 LDA#1:STA#C52
1330 .abort
1340 LDA#81:LDY#897:LDY#FF:JSR
&FFF4:TYA:BEQhold
1350 LDA#2:STA#C4E:JMPdead
1360 .hold
1370 LDA#881:LDY#8B6:LDY#FF:JSR
&FFF4:TYA:BEQnofreeze
1380 LDA#C52:STA#C50
1390 LDA#0:STA#C52
1400 .freeze
1410 LDA#881:LDY#8B7:LDY#FF:JSR
&FFF4:TYA:BEQfreeze
1420 LDA#C50:STA#C52
1430 .nofreeze
1440 JSRpause
1450 LDA#C4E:BNEdead
1460 LDA#8F:BNEml
1470 LDA#8E:BNEml
1480 .dead
1490 RTS
1500 .pause
1510 LDY#15
1520 LDY#0
1530 .ploop
1540 DEX:BNEploop
1550 DEY:BNEploop
1560 RTS
1570 .direction
1580 LDA#C57:BEQcheckpos1
1590 LDA#71:CMP#87B:BNEcheckpos:
JSRfungi1
1600 LDA#C4E:BEQcheckpos
1610 RTS
1620 .checkpos LDA#71:CMP#87C:BN
Echeckpos1:JSRfungi1
1630 LDA#C4E:BEQcheckpos1
1640 RTS
1650 .checkpos1
1660 LDA#70:SEC:SBC#840:STA#74
1670 LDA#71:SBC#1:STA#75
1680 LDY#0
1690 LDA(874),Y:BEQunderneath
1700 CMP#7:BNEcarr
1710 JSRblank
1720 .carr
1730 LDA#C4A:CMP#1:BNEother
1740 LDA#4:STA#C4A
1750 .other
1760 LDA#C4A:CMP#2:BNEunderneath
1770 LDA#3:STA#C4A
1780 .underneath
1790 LDA#70:CLC:ADC#840:STA#74
1800 LDA#71:ADC#1:STA#75
1810 LDA(874),Y:BEQlefthand
1820 CMP#7:BNEcarr1
1830 JSRblank
1840 .carr1
1850 LDA#C4A:CMP#4:BNEother1
1860 LDA#1:STA#C4A
1870 .other1
1880 LDA#C4A:CMP#3:BNElefthand
1890 LDA#2:STA#C4A
1900 .lefthand
1910 LDA#70:SEC:SBC#8:STA#74
1920 LDA#71:SBC#0:STA#75
1930 LDA(874),Y:BEQRighthand
1940 CMP#7:BNEcarr2
1950 JSRblank
1960 .carr2
1970 LDA#C4A:CMP#1:BNEother2
1980 LDA#2:STA#C4A
1990 .other2
2000 LDA#C4A:CMP#4:BNERighthand
2010 LDA#3:STA#C4A
2020 .righthand
2030 LDA#70:CLC:ADC#16:STA#74
2040 LDA#71:ADC#0:STA#75
2050 LDA(874),Y:BEQmove
2060 CMP#7:BNEcarr3
2070 JSRblank
2080 .carr3
2090 LDA#C4A:CMP#2:BNEother3
2100 LDA#1:STA#C4A
2110 .other3
2120 LDA#C4A:CMP#3:BNEmove
2130 LDA#4:STA#C4A
2140 .move
2150 LDA#C4A:CMP#1:BEQupleft
2160 LDA#C4A:CMP#2:BEQupright
2170 LDA#C4A:CMP#3:BEQdownright
2180 LDA#70:CLC:ADC#838:STA#70
2190 LDA#71:ADC#1:STA#71
2200 RTS
2210 .upleft
2220 LDA#70:SEC:SBC#848:STA#70
2230 LDA#71:SBC#1:STA#71
2240 RTS
2250 .upright
2260 LDA#70:SEC:SBC#838:STA#70
2270 LDA#71:SBC#1:STA#71
2280 RTS
2290 .downright
2300 LDA#70:CLC:ADC#848:STA#70
2310 LDA#71:ADC#1:STA#71
2320 RTS
2330 .print
2340 LDY#2
2350 .loop1
2360 LDY#15
2370 .loop2
2380 LDA(87C),Y:EOR(872),Y:STA(8
72),Y
2390 DEY:BPLloop2
2400 TXA:CMP#2:BNEfido
2410 JSRspin
2420 .fido
2430 LDA#70:STA#72
2440 LDA#71:STA#73
2450 DEX:BNEloop1
2460 RTS
2470 .batter
2480 LDA#881
2490 LDY#89E
2500 LDY#8FF
2510 JSR#FFF4
2520 TYA:BEQright
2530 LDA#76:SEC:SBC#16:STA#76
2540 LDA#77:SBC#0:STA#77
2550 .right
2560 LDA#81
2570 LDY#8BD
2580 LDY#8FF
2590 JSR#FFF4
2600 TYA:BEQchecker
2610 LDA#76:CLC:ADC#16:STA#76
2620 LDA#77:ADC#0:STA#77
2630 .checker
2640 LDA#76:CMP#8F8:BNEcheck1:LD
A#77:CMP#87A:BNEcheck1:LDY#8:STA#
76:LDY#87B:STA#77
2650 .check1 LDA#76:CMP#8:BNEbat
print:LDA#77:CMP#87C:BNEbatprint:
LDA#8F8:STA#76:LDY#87B:STA#77
2660 .batprint
2670 LDA#1:STA#C56
2680 LDY#2
2690 .loop3
2700 LDY#63
2710 .loop4
2720 LDA#C56:BNEostripe
2730 LDA#8A0:EOR(878),Y:STA(878)
,Y
2740 .nostripe
2750 INC#C56:LDY#C56:CMP#2:BNEst
ripes
2760 LDA#0:STA#C56
2770 .stripes
2780 DEY:BPLloop4
2790 LDA#76:STA#78
2800 LDA#77:STA#79
2810 DEX:BNEloop3
2820 RTS
2830 .blank
2840 LDA#1:STA#C57
2850 LDA#8E:SEC:SBC#1:STA#8E
2860 LDA#8F:SBC#0:STA#8F
2870 LDY#7:LDY#0
2880 .bloop
2890 STA(874),Y
2900 DEY:BPLbloop
2910 LDA#74:STA#7E
2920 LDA#75:STA#7F
2930 LDA#C4C:CLC:ADC#3:STA#C4C
2940 LDA#C4D:ADC#0:STA#C4D
2950 RTS
2960 .ascend
2970 LDA#0:STA#C48
2980 LDA#7E:SEC:SBC#80:STA#7E
2990 LDA#7F:SBC#2:STA#7F
3000 JMPcountdown
3010 .fungi1
3020 LDA#0:STA#C57
3030 LDA#7E:CLC:ADC#80:STA#7E
3040 LDA#7F:ADC#2:STA#7F
3050 CMP#87B:BNEok
3060 LDA#3:STA#C4E:RTS
3070 .ok

```

Turn to Page 21 ►

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◀ From Page 19

```

3080 LDA#7F:CMF#87C:BNEOK1
3090 LDA#3:STA#C4E:RTS
3100 .ok1
3110 LDY#0
3120 LDA#7E,Y:BNEascend
3130 LDA#1:STA#C48
3140 .countdown
3150 LDA#8E:CLC:ADC#1:STA#8E
3160 LDA#8F:ADC#0:STA#8F
3170 LDY#7
3180 .funloop
3190 LDA#C4D,Y:STA#7E,Y
3200 DEY:BPLfunloop
3210 LDA#C54:STA#C51
3220 LDA#C53:SEC:SBC#50:STA#C53
3230 LDA#C54:SBC#0:STA#C54
3240 LDA#C51:SEC:SBC#C54:BCSgrow

```

```

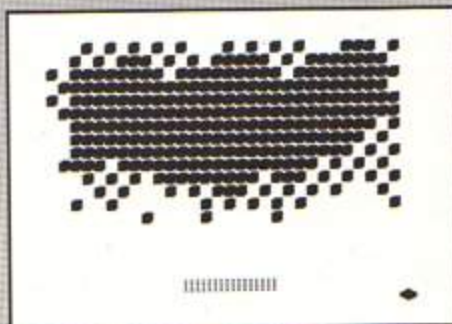
3250 LDA#1:STA#C4E
3260 LDA#0:STA#C53:STA#C54
3270 RTS
3280 .grower
3290 LDA#C58:BEQsize
3300 LDA#7E:SEC:SBC#40:STA#7E
3310 LDA#7F:SBC#1:STA#7F
3320 .size
3330 RTS
3340 .spin
3350 INC#C48:LDA#C48:CMF#14:BEQangle
3360 RTS
3370 .angle LDA#1:STA#C48
3380 INC#C49:LDA#C49:CMF#5:BNEon

```

```

3390 LDA#1:STA#C49
3400 .one
3410 LDA#C49:CMF#1:BNETwo
3420 LDA#0:STA#7C:LDA#C:STA#7D
3430 JMPProtend
3440 .two
3450 LDA#C49:CMF#2:BNEthree
3460 LDA#810:STA#7C:LDA#8C:STA#7

```



```

3470 JMPProtend
3480 .three
3490 LDA#C49:CMF#3:BNEfour
3500 LDA#820:STA#7C:LDA#8C:STA#7
3510 JMPProtend
3520 .four
3530 LDA#830:STA#7C:LDA#8C:STA#7
3540 .rotend
3550 RTS
3560 .endtone
3570 LDX#847
3580 LDY#8DB
3590 SEI
3600 STX#204
3610 STY#205
3620 CLI
3630 RTS
3640 J
3650 NEXT
3660 ENDPROC
3670 DEFPROCgame
3680 MOVE28,0:DRAW1252,0:DRAW125
2,990:DRAW28,990:DRAW28,0
3690 CALL#5000
3700 IF #C4E=1 COLOUR1:PRINTTAB
(3,14);"Bonus is zero-"TAB(6,16);
"Game over":GOTO3750
3710 IF #C4E=2 COLOUR1:PRINTTAB
(3,14);"Game aborted"TAB(6,16);"N
o bonus":#C53=0:#C54=0:#8E=0:#

```

```

88F=0:GOTO3750
3720 IF #C4E=3 COLOUR1:PRINTTAB
(3,14);"The fungus"TAB(3,16);"has
killed you":#8E=0:#8F=0:GOTO37
50
3730 COLOUR2
3740 PRINTTAB(3,14);"Congratulat
ions"
3750 TIME=0:REPEATUNTILTIME=400
3760 CALLendtone
3770 ENDPROC
3780 DEFPROCscores
3790 VDU23,250,24,36,66,126,66,3
6,24,0
3800 DIM S$(10),HIX(10)
3810 FORI=1TO10
3820 READS1$
3830 S$(I)=S1$+" "+CHR$250
3840 HIX(I)=2000+(I*200)
3850 NEXT
3860 ENDPROC
3870 DEFPROCinstruct
3880 PRINT"" Spinning Frustrat
ion"
3890 PRINT" =====
"
3900 PRINT" The idea of this gam
e is to knock out"" all the fun
gus at the top of the"" screen
with a spinning ball which"" bo
unces about the screen. If the b
all"" hits the bottom directly
after hitting""
3910 PRINT" a block the fungus g
rows and you loose"" some bonus
. You have to stop this"" from
happening by catching the ball""
"" with the bat which you can mov
e left"" and right at the botto
m of the screen""
3920 PRINT" If the fungus reache
s the level of"" your bat the g
ame will be over. You"" score
points for hitting blocks."" Pr

```

ess space to scroll."

3930 REPEATUNTILINKEY=99

3940 PRINT"" The game will be o
ver also if your"" bonus falls
to zero. The little symbol"" (""
;CHR\$250;") in the high score tab
le means that"" it is a name pu
t in by the computer."" These a
re your keys:"" Z.....Left"
3950 PRINT" X....Right"" Retur
n....Freeze game"" *....Unfreez
e game"" ?....Abort game"" Q.
...Sound off"" S....Sound on""
" Press space to start the game."
""

3960 AS="...Spinning Frustration
...devised and programmed and mus
ic composed by Nicholas Jameson (A
ged 11)...For the Lancaster Roya
l Grammar School minibus appeal..
""

3970 COLOUR129:COLOUR0
3980 REPEAT
3990 PRINTTAB(2,28);MIDS(AS,1,36
)

4000 TIME=0:REPEATUNTILTIME=5 OR
INKEY=99
4010 AS=AS+MIDS(AS,1,1)
4020 AS=MIDS(AS,2,158)
4030 UNTILINKEY=99
4040 ENDPROC
4050 DEFPROCreport
4060 CX=0

```

4070 *FX4,1
4080 SCX=#8C4C
4090 SC1X=#8C4D
4100 SC1X=SC1X*256
4110 SCX=SCX+SC1X
4120 BOX=#8C53
4130 BOX=#8C54
4140 BOX=BOX*256
4150 BOX=BOX+BOX
4160 SCX=SCX+BOX
4170 COX=#8BE
4180 CO1X=#8BF
4190 CO1X=CO1X*256
4200 COX=COX+CO1X
4210 SCX=SCX-COX
4220 IFSCX<HIX(1) PRINT"" Yo
ur score is ";SCX ELSE PRINT""
Please enter your name ":PROCTa
ble
4230 PRINT"" High scores:"
4240 FORI=1TO10STEP-1
4250 IFCX=I$ PRINT"" ";HIX(I);
".....";DX=POS:EX=VPOS:PRINT:
GOTO4270
4260 PRINT"" ";HIX(I);".....
";S$(I)
4270 NEXT
4280 IFCX>0 PROCName
4290 PRINTTAB(4,28);"Press space
for another go"" or press
I for instructions"
4300 *FX21,0
4310 REPEAT:key=GET:UNTIL key=AS
C"i" OR key=ASC"i" OR key=32
4320 IFkey=32 IX=0 ELSEIX=1
4330 ENDPROC
4340 DEFPROCtable
4350 FORI=1TO10STEP-1
4360 IFSCX>HIX(I) PROCshift:END
PROC
4370 NEXT
4380 ENDPROC
4390 DEFPROCshift
4400 CX=IX
4410 FORBX=1TOIX
4420 S$(BX-1)=S$(BX)
4430 HIX(BX-1)=HIX(BX)
4440 NEXT
4450 HIX(IX)=SCX
4460 ENDPROC
4470 DEFPROCname
4480 *FX21,0
4490 S$(CX)="
4500 LX=0
4510 VDU31,DX,EX
4520 REPEAT
4530 key=GET
4540 IFkey=13 PRINTTAB(3,3);"
":UNTILkey=13
ELSE IFkey=127 AND LX=0:UNTIL0 EL
SE IF key=127 S$(CX)=MIDS(S$(CX),
1,LEN(S$(CX))-1):LX=LX-1:VDU127:U
NTILO ELSE IFLX<13 VDUkey:S$(CX)=
S$(CX)+CHR$key:LX=LX+1:UNTILOELSE
GOTO4570
4550 ENDPROC
4560 SOUND1,-15,10,3
4570 UNTILO
4580 DEFPROctitle
4590 VDU19,1,3,0;
4600 PRINTTAB(8,12);"By Nicholas
Jameson..."
4610 VDU31,10,14
4620 AS="Spinning Frustration"
4630 MOVE320,504
4640 FORLX=1TO20
4650 #870=ASC(MIDS(AS,LX,1))
4660 AX=10:XX=#870:YX=0:CALL#FFF1
4670 VDU23,224
4680 FORKX=0TO7
4690 VDU?(&71+(KXDIV2))
4700 NEXT
4710 VDU23,225
4720 FORKX=0TO7
4730 VDU?(&75+(KXDIV2))
4740 NEXT
4750 VDU224,8,10,225,11
4760 DRAW320+(LX*32),504
4770 SOUND1,-15,40+(LX*8),2
4780 TIME=0:REPEATUNTILTIME=6
4790 NEXT
4800 VDU19,1,3,0;
4810 TIME=0:REPEATUNTILTIME=300
4820 ENDPROC

```


Have suitcase, will compute



**Leslie Goodridge shows
how to make sure your
Electron is always
ready for action**

IN common with most home computers, the Electron suffers from the drawback that several items need connecting each time it is used, resulting in a tangle of wires and equipment. One solution is to leave everything permanently set up in a room. More often than not however, the Electron will be left in a cupboard and brought out

infrequently because of the hassle of setting it up each time.

The answer is to make a custom built carrying case, transforming your machine into a portable go-anywhere computer. The case described here has the keyboard, tape recorder, disc drive and so on permanently fixed inside and the machine's RGB, video and UHF/TV outlets are extended to the rear.

Power is supplied by a single mains lead which plugs into a connector at the back of the case. Further socket outlets at the rear provide power for the other items such as the monitor or a printer. Additionally, the front section of the lid folds back flat to provide a base on which to place the monitor.

When not needed the carrying case can

be stored upright, taking up very little floor space, yet within less than two minutes your computer can be ready to use.

The materials used to construct the case are relatively cheap and are easily obtainable from any good DIY or hardware store. The front, back and side rails for the base unit and lid are made from 15mm thick planed timber, with the base and lid sections of 6mm plywood. The lid sections are linked with three small brass hinges; others connect the rear lid section to the back rail of the base unit.

Four quick release toggle catches secure the lid sections to the base, and a lie-flat handle is fastened to the front rail for carrying. Rubber feet are glued to the bottom of the case and, if needed to the back rail to keep



the case upright when stored.

Small brackets made by bending strips of aluminium are used to hold the Electron and other items securely in the case, as shown in the photographs. These brackets are fastened to the base with small countersunk bolts and nuts. Other items such as the Plus 3's transformer can be secured with nuts and bolts passing through rivet holes. Sufficient brackets should be used to prevent equipment from sliding around or falling out of the case.

Once you have determined the dimensions for the case (see panel), cut out all the sections shown in the diagram. Box joints are used where shown as they are strong and simple to make. The remaining joints for the lid are 90 degree or 45 degree butt joints. All

sections are glued together with PVA wood adhesive which is strong enough for all but the very sloppiest of box joints.

Start construction by gluing the base unit together. This is best done on a flat surface such as a table – but beware of marking it! Assemble and glue the four sides together then glue them to the base, making sure that everything is square. Use plenty of glue to ensure good adhesion and wipe off any excess.

Weigh the sides down to make sure they fit properly on to the plywood base, and hold joints together with sticky tape until the glue has set.

Next make up the two lid sections. These should be glued together on top of the base

unit to ensure an accurate fit. Use strips of polythene to prevent the two lid sections from sticking to each other or to the base.

The back rail of the front lid section will first need shaping to fit flush up against the rear lid. Sticky tape should again be used to hold the lid sections on to the base, as well as holding joints firmly together until the glue sets. Finally, glue the lid sections on to their plywood tops.

When everything has thoroughly set plane or sand off any excess material and round off any sharp corners and edges to give a smooth finish. At this stage it is best to cut the holes at the rear of the case for the

Turn to Page 24 ►

Shaping up

The exploded diagram and photographs show the case's basic design. No absolute measurements are given as these will depend on how much equipment it is to hold. So the first step is to assemble all your equipment to determine the various dimensions. There are however, a few points to bear in mind when doing this.

- The front rail of the base unit should be about 35mm high, which is approximately the height of the front of the Electron's keyboard. Any higher than this will cause trouble when typing. It may also be necessary to remove a section from the bottom rail, with a corresponding extension in the lid to allow easy insertion of discs – particularly with the Plus 3.

- The overall internal height of the case with the lid closed must be sufficient to allow clearance for any cartridges or interfaces. Allowance must also be made at the back of the case for the internal electrical connections.

- The front section of the lid must be sufficiently deep to take a monitor, but not so deep that it overhangs excessively when folded back. Between 9in to 11in is about right.

- Don't just design the case for your present equipment – make allowances for later expansion.

◀ From Page 23

electrical connections, described later.

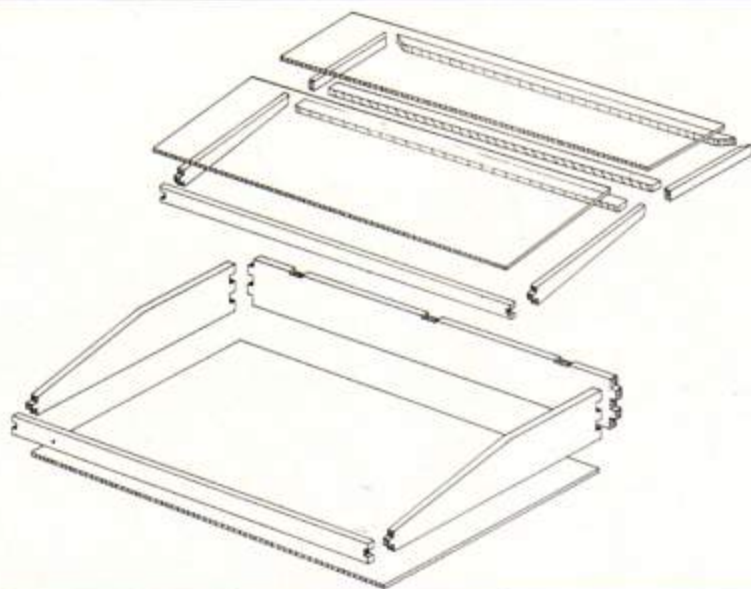
You will also need to drill 0.75in or 0.5in ventilation holes spaced 0.5in apart in the plywood base. You can decide where to put them by roughly assembling the equipment in the case and noting where the equipment vent holes are. All this completed, give the case a few coats of varnish.

The case is now ready to assemble. Connect the front and rear lid sections together with three small brass hinges, flush fitted so that the front section hinges back on to the rear section. The rear lid section should then be hinged to the back rail of the base unit. If you feel confident and want a neat finish you can recess the hinges. If you are not too confident, simple flush fitting is quicker and more accurate.

When the lid is fitted attach the quick release toggle catches, then fit the carrying handle and rubber feet. The final stage of assembly involves fitting the equipment into the case and fastening it down, but before this is done make all the electrical connections.

All the items needed can be obtained from electronics suppliers such as Tandy, or mail order firms like Maplins and Watford Electronics. Wiring up is best done with the lid removed to give better access.

To extend the Electron's RGB, video and UHF/TV inputs you will need two phono plugs, a dual phono jack board, a 6 pin flanged DIN



Exploded diagram of the main components of the case



Front view of the case showing the internal layout of the components



Fastening components into the case using aluminium brackets and small bolts

socket, a 6 pin DIN plug and also single and 5 core screened lead.

Cut holes in the left-hand side of the back rail and fit the dual phono jack board and 6 pin flanged DIN socket. These should then be connected to the Electron using the appropriate plugs and screened lead.

The video and UHF/TV outlets are simple to wire up using the single screened lead and phono plugs. The DIN connectors for the RGB output are a little more involved, as there are six connections to solder at each end.

Using the 5 core screened lead, join pins 1 to 6 on the socket to pins 1 to 6 on the plug, with pin 5 connected to the cable's screening. As a rough guide you will need two metres of single and one metre of 5 core screened lead.

The mains input into the case is made using IEC/CEE connectors – the sort used on electric kettles.

To link up to the mains you will need a 13 amp 3 pin plug, four metres of 13 amp mains cable, an IEC/CEE panel mounted inlet connector and free socket, both with screw terminals. You will also need a single or dual gang 13 amp 3 pin socket outlet and a surface mounting terminal block.

Fit the flanged IEC/CEE inlet connector and 13 amp socket outlet into holes cut in the back rail, as shown in the photographs. They should be as close together as possible, but not so close to the phono connections to cause shorting.

Using colour coded 13 amp mains wire connect the live, neutral and earth terminals on the IEC connector to the 13 amp socket outlet. At the same time run wires to the surface mounted terminal block which should be fastened in a convenient location.

This terminal block allows the tape recorder or disc drive power supply to be wired easily into the mains input. If these items have moulded-on plugs they will first need cutting off. The alternative is to place additional socket outlets inside the case for them to plug into.

It is very important that the electrical connections inside the case are insulated and properly isolated with a cover, so that there are no exposed wires. A cover can be made from 6mm plywood, as shown in the photographs. The screws securing it to the back rail should pass through wooden posts to insulate them from mains wiring.

If you wish, you can also cut an aperture in the back for the printer cable to pass through. When not needed it can be closed off with a hinged aluminium plate.

Finally, make up the mains lead from 13 amp 3 core cable fitted with a 13 amp 3 pin plug at one end and a IEC/CEE socket at the other. This lead like any others you have, can be stored inside the case when not in use.

When all the electrical connections have been completed arrange your Electron and other items inside the case and fasten them down with the aluminium brackets and bolts. Replace the lid and your carrying case is complete.

And now you have a truly portable computer and there's no excuse for it languishing in a cupboard ever again!



Back view of the case showing the electrical components, hinges and toggle catches



Internal cover in place over the electrical wiring



Internal wiring layout with the cover removed

THE rain is once again cascading through the straw roof, flooding the keep, and Archimedes is beginning to gain his winter plumage – sure signs that the fall is with us. Once more we dust off our Electrons to while away long autumn evenings as we tax our cerebral reserves and battle to become ever better adventurers.

I am often asked which games are the most difficult to solve and whether the most complex are necessarily the best. This is a tricky question to answer, because the difficulty – or frustration factor – of an adventure can be due to many things and not all of them necessarily good.

Clever plot and tricky riddles certainly increase the difficulty, but so, too, do unmappable mazes, illogical puzzles and crazy random factors – such as the dwarf in Sphinx Adventure or the sea in Savage Island I.

Anyway here are the most taxing adventures I have come across on the Electron, and by each I suggest the reason for the difficulty:

The Ferryman Awaits: A massive jaunt with excruciating puzzles which only become

Autumn

obvious after finishing it. By far the most difficult game I have played.

Savage Island I: Uncontrollable random factors operate and make this game infuriating.

Village of Lost Souls (the original Magus version): The whole adventure can be explored from the outset and no order of puzzle solving is apparent. However, the atmosphere and plot are stunning.

Sphinx Adventure: No Save Game feature and that blasted dwarf make progress staccato.

Acheton: Its sheer size of more than 350 locations – and quirky humour make it a devil to solve.

On another tack, it seems that the trend this past year has been for Electron adventurers to turn their hand to writing their own games. This has no doubt been partly due to a dearth of releases from the top

adventure houses since last Christmas, but also there is a certain logic and good sense in turning adventuring experience to productive purpose.

Of a couple of dozen games which have come my way this year, four particularly stand out head and shoulders above the rest. I must begin by thanking Jonathan Gates of

Problems Solved

This month I am featuring an assortment of tips to help you manipulate some of the objects in that most difficult of adventures, The Ferryman Awaits. These tips supplement those given in the March 1987 edition. Next month I will treat you to some more inside information on this taxing adventure.

Acolytes: Push the priest's body into the snake pit, then follow the weird disciples.

Lamp: In the storeroom. It is not used as the skull provides your light source.

Ledge: In the cell. EXAMINE LEDGE reveals the flint.

Flint: A weapon to kill the guard. Exchange at the pool for the magic sword.

Cell: To escape from the cell first get the sharp flint. Shout to attract the guard who opens the door, then kill him.

Guard: Leave his body in the cell and exit. Close the door then go and collect the skull. On return you will find fungus growing on his body.

Skull: Shake the pole in the courtyard to reveal the skull. Take it to the cell and put the skull on the ledge. A green light shines from its eye sockets and provides a light source in the stone tree area.

Floppy hat: One of the two magic transport devices. It works only in certain locations such as the underworld wind-swept plain. Get the hat in the temple waiting room. To operate it WEAR HAT, NORTH, GET HAT, LOOK.

Statue: If you are in the temple, PUSH STATUE opens up a gap giving access to the tower roof, and a section where the parrot and magic compass/box are. To get inside and

collect the robe the gap must be closed.

Iceball: Release by going east to the walkway, then south on to a sloping roof. Escape from the ball by immediately going north back to the walkway, then west. The iceball falls into the mud lake and generates a mist.

Compass: The ivory box or model of compass, is found in the small chamber, which is south and down from the balcony. It gives a course on the underworld plain.

Bottle of blood: Ascend the altar and drop the guard's corpse. The bottle rolls into the snake pit. Collect it and go on to the river. The bottle activates the pentagram in the final show-down.

Robe: Return to the temple, pull the statue to close the gap. Go to the bottom of the slope, climb the rope and approach the statue from the rear. The priest's robe is inside. Wear the robe and carry the scythe to scare the demons guarding Agrogorggan.

Guards on the bridge: Cross the tower bridge and the guards spear you. But, if you are one of the living dead, this has no effect and the guards flee, dropping the wooden spear.

Boots: Soft leather sea boots found at the marble-lined pool. Wear them to enter the cave and to stop the roof collapsing when you collect the cube.

Death's scythe: In the chamber under the tree. SAY DEATH, who, shocked by the ravages of time, drops his scythe – the only weapon effective against Agrogorggan.

Time: After getting the scythe, SAY TIME. Old Man Time appears, this undoes the effects of the time lapse. Now climb the stone tree.

Open
Gamb
Map
No. 9
Suds
electr

almanac

Nottingham for his swashbuckling pirate adventure, **Sea Queen**, which he has produced in 32k and 64k form.

I also particularly liked a machine code epic called **Rawksley Manor** by Andrew Stewart of Penrith. This game encapsulated a certain air of Larsoft style in its room descriptions and was a jolly good jaunt to

boot. Another excellent submission is **Prisoner of War** from Mark Richardson of Essex. This World War II escapade is cleverly written and with some careful tidying up of spelling could be a best seller.

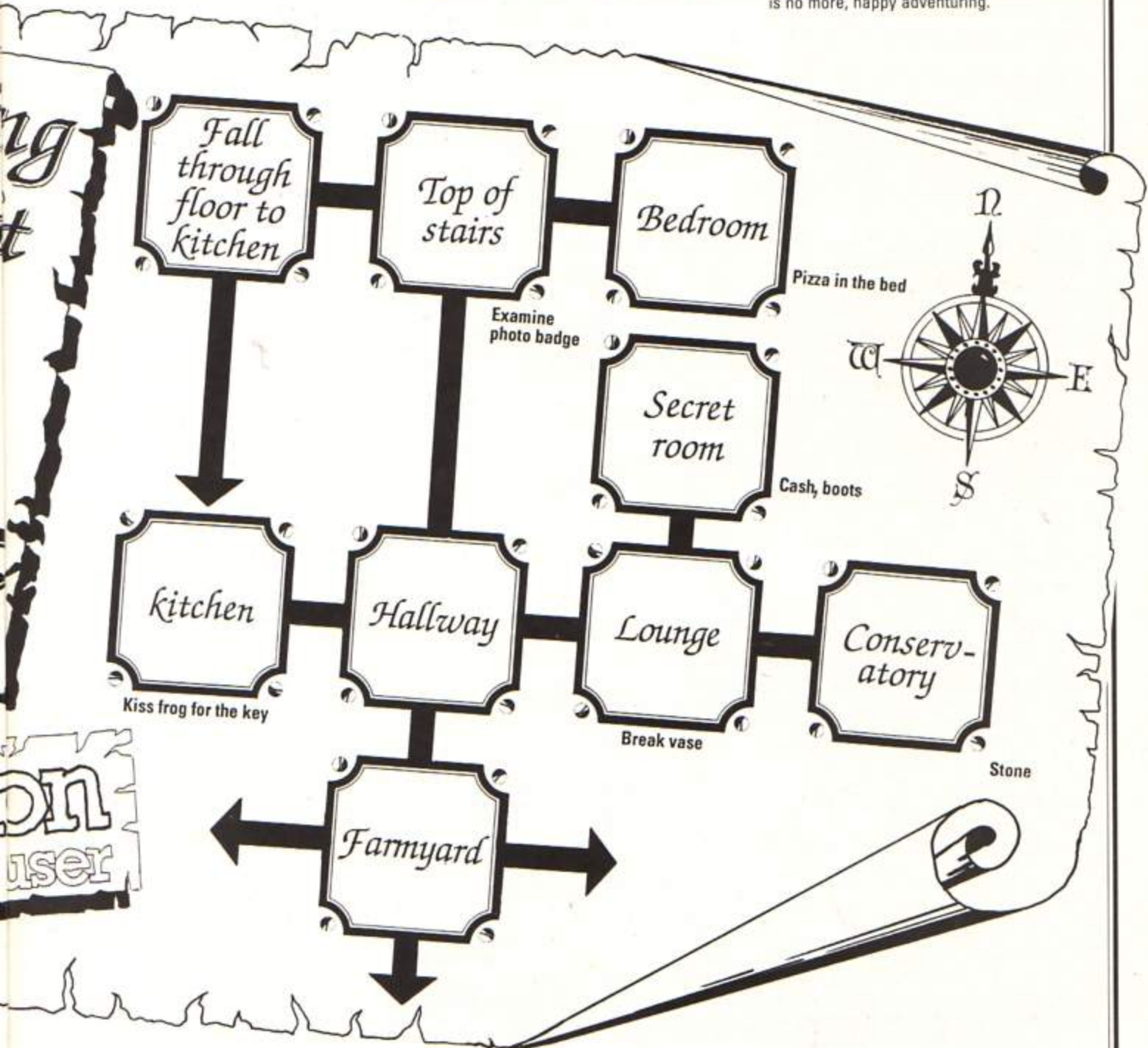
However, perhaps marginally the best of the batch is a game called **Funworld** written by David Wilson and his two sons Jon and Paul - who have called themselves Esprit Software. This excellent jaunt is set in a

theme park and your task is to rescue grandad while solving a selection of interesting puzzles.

I can thoroughly recommend all four adventures. So if any software company would like to market one or all of these pure text games, could they contact me directly and I will put them in touch with the respective authors.

Finally, this month's featured map is of the opening scenario to Riverdale's excellent spoof adventure **Suds**. I hope this helps any wayfarers stuck at the outset of this real rib tickler.

Next month I continue this series with a guide to the opening to Epic's early classic, **Castle Frankenstein**. So until forever autumn is no more, happy adventuring.



Overture and Beginners

Many times during the past three years I have mentioned the strength or limitations of the parser to various adventures. It is a subject I have discussed with you and one to which I gave much space for the best part of 18 months to a glossary of adventuring terms. It is therefore probably appropriate that we draw to a close this series of help for beginners by discussing in more detail the part a parser plays in an adventure.

First off, just what does "a parser" mean? It comes from the word parse which means to describe. So an adventure parser is the way the game's artificial intelligence has been manipulated to make your command interaction understood by both computer and human. In simple terms it is the extent to which you are allowed to make yourself understood.

In the early days of Electron text adventuring - Sphinx Adventure is a golden example - a game parser was likely to accept only two words of command at a time. Usually this was in the form of a verb followed by a noun, such as GET APPLE or OPEN DOOR. This style still restricts games written by adventure creation utilities like The Quill.

But that wasn't the only constraint. Limitations of computer memory and underdeveloped programming ability also meant the adventure's vocabulary had to be drastically curtailed.

For example if you knew the correct action to a particular situation was to slide a piece of newspaper under a door, you may have struggled in vain to find the right combination of words to accomplish the action.

This was not because you didn't know what to do, but because the program required absolute precision in wording. SLIDE NEWSPAPER, SLIDE PAPER, ENTER NEWSPAPER, SHOVE PAPER and many other combinations would perhaps come to no

Common adventuring commands	
Break	smash, hit, cut, destroy
Close	shut
Dig	
Drink	sip, taste
Drop	remove, leave, put, release, lower, empty
Eat	
Examine	search, look, inspect, read
Fill	
Get	take
Give	
Go	move, run, walk, climb, follow, swim, enter, leave, exit, ride
Help	
Inventory	inv, i
Kiss	
Light	turn on, on
Make	build
Open	unlock
Push	pull, slide, move, lift, raise
Score	
Sit	
Stand	
Talk	ask, tell, question
Turn	operate, start, press, switch
Undo	oops, og
Wait	
Wear	

avail. When all the time the simple but elusive PUSH PAPER would do the trick.

Such programs still find their way on to the market even now, although thankfully they have become increasingly rare.

As time passed adventure programmers became more adept at machine code routines and text compression and sophisticated parsers made adventures seem a whole lot more realistic and logical to play. The Robico games are excellent examples of adventures with advanced parsers.

The possibilities were pushed still further by extensions in the Electron's ram memory by Mode 7 adaptors or the Slogger Master Ram Board. Now the wealth of Level 9 classics were open to Electron adventurers.

These developments also meant extended vocabularies which allow you to use a range of alternative words to achieve an action and still meet success. For instance the acceptable adventure synonyms for DROP may now include: REMOVE, LEAVE, PUT

DOWN, FREE, RELEASE, LOWER, TAKE OFF, EMPTY, THROW DOWN, PLACE and so on.

Modern day parsers - especially in the Robico, Level 9, Topologika and Heyley adventures - allow quite complex actions such as: TAKE ALL BUT THE GREEN PEN, OPEN THE RED BOOK AND WRITE IN IT WITH THE BLUE PEN, THEN GET EVERYTHING AND GO NORTH.

The use of ALL, IT and EVERYTHING certainly saves wear and tear on tired adventurers' fingers, but ironically enough the occasions you need to use such powerful and complex commands turn out to be far more infrequent than you might have thought. In fact most adventurers still fall back on the old-fashioned verb-noun input for reasons of pace and simplicity. Old habits die hard.

Despite this, some words and actions still remain common in almost all adventures, so I have made up a quick reference guide to popular adventuring commands - with common synonyms where required.



THE prices of Electron software and hardware add-ons are falling so fast it seems that they'll soon be given away free with packets of cornflakes. Software Bargains has bought huge stocks of Acornsoft's View and Viewsheet, and although this superb duo sells quite well on its own, Software Bargains has made them even more attractive by bundling them with a plug-in hardware add-on board like a Plus 1 without the cream plastic case. And at a rock bottom price too.

There are three packages: PCB (the hardware add-on) with one cartridge port plus View and Viewsheet for £29.95; PCB with one cartridge and printer port plus View and Viewsheet for £36.95; and PCB with two cartridge ports and printer port plus View and Viewsheet priced at £39.95.

Upgrades are available to take you from the bottom of the range model PCB to the top.

In addition you can also buy the Electron Advanced User Guide for only 99p – a bargain, and a must for programmers or anyone who likes to tinker with the micro's operating system.

View and Viewsheet should need no introduction, but for those who haven't yet met them, they are rom cartridge-based software. View is a word processor for writing letters, memos and documents, while its relative, Viewsheet, is a spreadsheet designed for manipulating figures, handling financial accounts and so on.

Both represent the most powerful software of their type available for the Electron and together make up a flexible home business system.

The hardware add-on is a bare printed circuit board (PCB) which plugs into the back of the Electron. Apart from the squarer shape and lack of analogue joystick port, it is basically the same as the PCB inside a Plus 1.

The two cartridge ports can be used for

An offer you can't refuse

A new add-on board complete with a spreadsheet and word processor is tested by Roland Waddilove

View, Viewsheet or any other cartridges you have. A Pres AP4 disc interface and Cumana drive set up also functioned without a hitch when plugged into the cartridge ports. The printer port operates as expected too.

There are two disadvantages with the hardware. First, there isn't a case, so the bare PCB hangs from the back of the Electron. It's easy to knock and damage, by no means as robust as a cased unit like the Plus 1. Then again, it hasn't a joystick port. However, I didn't miss that as there aren't many games that have a joystick option – and anyway, I prefer to use the keyboard.

This kit isn't a lot of use if you already upgraded your basic Electron with a Plus 1 and you would be better off scouring the adverts for cut-price View and Viewsheet cartridges.

If you haven't yet upgraded and either your

money won't stretch to a Plus 1 and View plus Viewsheet, or you're not bothered about the lack of matching Acorn cream plastic casing, this package represents good value for money. Recommended.

Product: PCB (cartridge port) plus View and Viewsheet

Price: £29.95

Product: PCB (cartridge port, printer port) plus View and Viewsheet

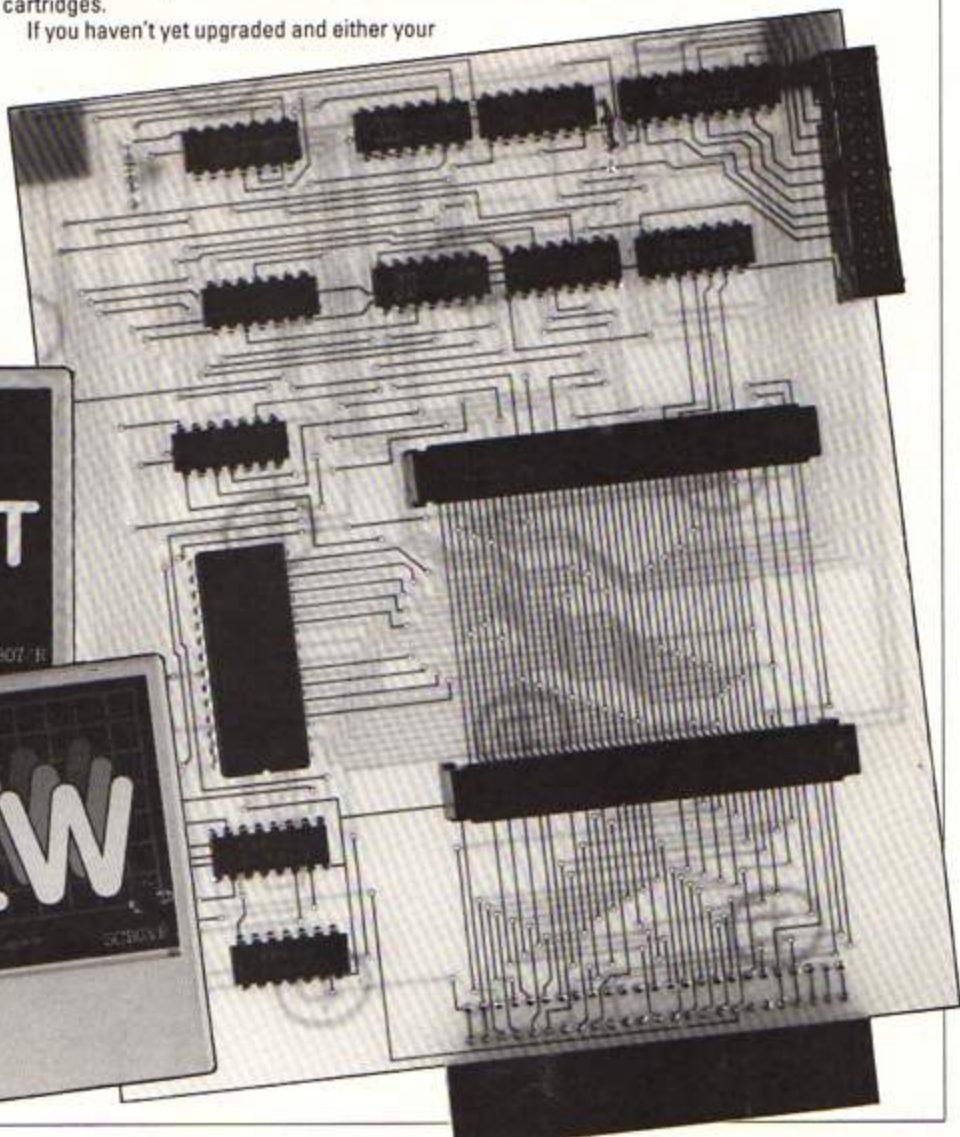
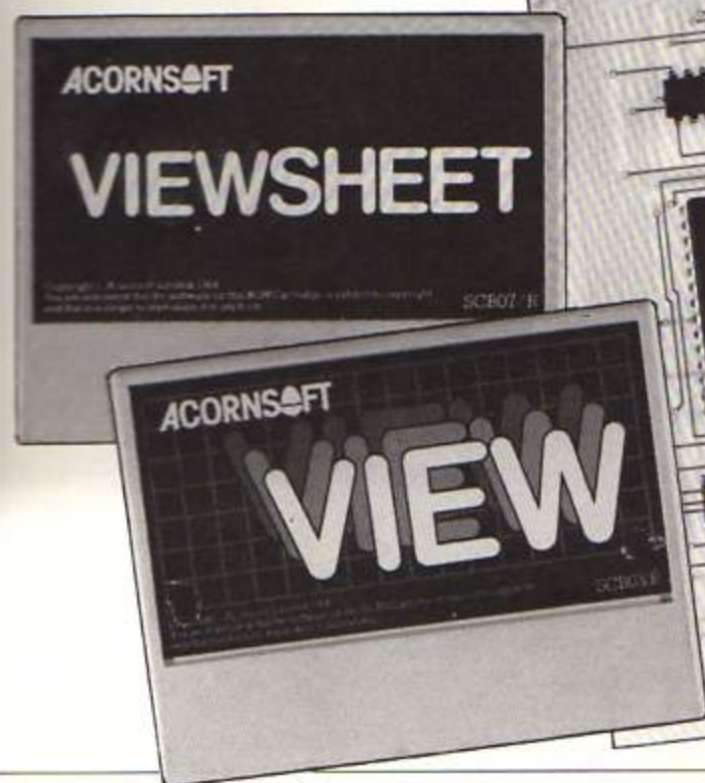
Price: £36.95

Product: PCB (two cartridge ports, printer port) plus View and Viewsheet

Price: £39.95

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TANK ATTACK

Tank Attack

The unique computerised board game

Tank Attack is a computerised board game for two, three or four players, where each one takes the role of a General commanding a country's Tank Corps of one or more armoured divisions.

Your objective is to capture the enemy headquarters, which will require the planned strategic deployment of your forces and regular fire duels between your own and enemy units.

Weather, morale, skill, judgement, planning foresight, careful management of rebuild and repair facilities and luck all play a part in deciding the result of each game.

Tank attack is one of those games you keep coming back to, and at the special offer price of only £19.99 is guaranteed to give you and your friends hours of action-packed excitement.

- Control a full division of tanks and armoured cars
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WHEELIES!

JET BIKE is a fast paced arcade game set in the future. After World War Three destroyed most of the towns and villages long, straight highways were built to connect the rebuilt cities.

Unfortunately, due to the poor post nuclear economic climate, parts have crumbled away over the years leaving large gaps, exposing power cables lying beneath the surface.

All this makes your job of motorcycle messenger very difficult. As you speed along the highways on your jet bike taking messages from city to city you must use considerable acrobatic skills to negotiate the crumbling road.

The screen scrolls rapidly from right to left and your aim is to keep the jet bike on the highways. Jump the gaps and power cables, for they drain your bike's power. When that's all gone the bike will explode. A replacement can be supplied, but write off too many and the messenger company will sack you.

Use Z to brake, X to accelerate and Return to jump. You can also use Z and X while in the air, a technique which may be needed to negotiate certain sections. If you keep getting killed early on hit both Shift keys hard. This has no effect on the game, but it might make you feel better.

Jump astride your jet bike and roar down the highway in Lyn Davies' hazardous scrolling arcade game



```
1REM Jet Bike
2REM By Lyn Davies
3REM (c) Electron User
10MODE5:DIM code 3500:VDU19,3,
6,0,:ENVELOPE2,1,4,-4,4,10,20,10,
126,0,0,-126,126,126:ENVELOPE1,12
9,15,8,3,10,10,10,126,0,0,-126,12
6,126
20?&70=&E0:?&71=&E6:?&900=20:?
&901=0:?&902=0:?&903=0:?&904=0:?&
907=247:?&908=0:?&78=&10:?&79=&71
:?&7A=&10:?&7B=&76:?&90A=0:?&90D=
0
30VDU23,224,255,254,128,128,12
8,128,128,128,23,225,128,128,128,
128,128,128,128,0,23,226,0,1,1,1,
1,1,1,23,227,1,1,1,1,1,1,1,1,27,25
5
40PROCdraw:PROCmach:CALLeno:CA
LLbar:CALLrac:CALLfio:END
50DEFPROCdraw:VDU19,1,0,0:VDU
19,2,0,0:VDU19,3,0,0:COLOUR129:
CLS:VDU5:FORF=90T01024STEP92:FOR
=16T01264STEP92:MOVEE,F:GCOL3,3:V
DU224,10,8,225:GCOL3,1:VDU8,11,22
6,8,10,227:NEXTE:NEXTF
60GCOL0,1:MOVE108,736:DRAW1184
,736:PLOT85,1184,832:MOVE108,736:
DRAW108,832:PLOT85,1184,832:GCOL0
,0:MOVE108,748:DRAW1184,748:DRAW1
184,824:GCOL0,2:MOVE108,748:DRAW1
08,824:DRAW1184,824
70GCOL0,0:MOVE96,96:DRAW1178,9
6:PLOT85,1178,664:MOVE96,96:DRAW9
6,664:PLOT85,1178,664:GCOL0,2:MOV
```

```
E92,96:DRAW92,664:DRAW1178,664:VD
U19,1,1,0:VDU19,2,3,0:VDU19,3,6
,0:FOR=8678T0867AF:READA:2E=A:
NEXT:ENDPROC
80DATA224,64,0,4,0,68,204,0,22
4,128,0,12,0,136,238,0,224,64,0,4
,0,68,68,0,224,128,0,8,0,136,238,
0,224,160,0,14,0,170,170,0,224,16
0,0,14,0,204,170,0
90DEFPROCmach:FORpass=DT02STEP
2:PX=code
100EOPtpass
110.car:EQUD&00F0000F:EQUD&0103
```

```
060D:EQUD&C4E67760:EQUD&036777E6:
EQUD&11D1111D:EQUD&0B070E1D:EQUD&
458B060D:EQUD&080C8ECE:EQUD&FFF0F
8FF:EQUD&0F00FFFF:EQUD&0F0F000F:E
QUD&0011100D:EQUD&E2E6CC88:EQUD&0
FOEEEE:EQUD&0F0F000F:EQUD&0CCE02
00:RTS
120.road:EQUD&FF0FF0FF0:EQUD&FF0
```

Turn to Page 32 ▶

NEW! TEN of the BEST! EDUCATIONAL GAMES

Packed full of some of the best educational games from the pages of *Electron User*, the new Ten of the Best Educational Games is the ideal way for your children to learn about maths, spelling, anagrams, telling the time, general knowledge, and even the rudiments of running a business!

Specially compiled by the *Electron User* team to give a good grounding in all aspects of learning, and at the very special price of only £5.95 on tape, or £6.95 on 3.5in disc, this collection is a treat you and your children cannot afford to miss!

Give your children hours of fun, and help them to learn the easy way by ordering your copy today.

THE PROGRAMS

Company Count – Work your way up through the company starting off as a messenger, and ending up as president!

Hungry Harry – Find out what it's like to be an assistant in a busy shop. Can you work out the correct change to give the customers?

Lemonade Stall – Try your hand at running a lemonade stall at a popular seaside resort.

Dozer Disorder – Fill in the

missing letters after they are bulldozed into a pit.

Crocodile – Unscramble the letters of a word before the crocodile gets you.

Snail Trail – See how good you are at general knowledge in this trivia quiz.

Hiss – Improve your spelling by guiding a snake round the garden eating up words in the right letter order.

Maths Fun – Test your powers of mental arithmetic.

Odd One Out – Pick the object that doesn't fit from the list of five.

Yule Spell – Guess the hidden word or you'll lose your Christmas presents!

ONLY £5.95

Order your copy today, using the form on Page 45

Write your own arcade smashes using the

ARCADE GAME Creator

Arcade Game Creator is a suite of programs for the Electron and BBC Micros. Taken from the pages of *Electron User*, it lets you into the secrets of writing fast-action arcade games, and provides you with a number of utilities to make design and programming easier.

Among the programs are:

- A Mode 5 sprite editor that lets you design your own multi-coloured characters.
- A selection of fast print routines that will move sprites both in front or behind other objects on the screen.
- Map generators that will squeeze a Mode 5 screen into 8 bytes!
- Scrolling maps.
- Score update and printing routines.
- ... and much, much more.

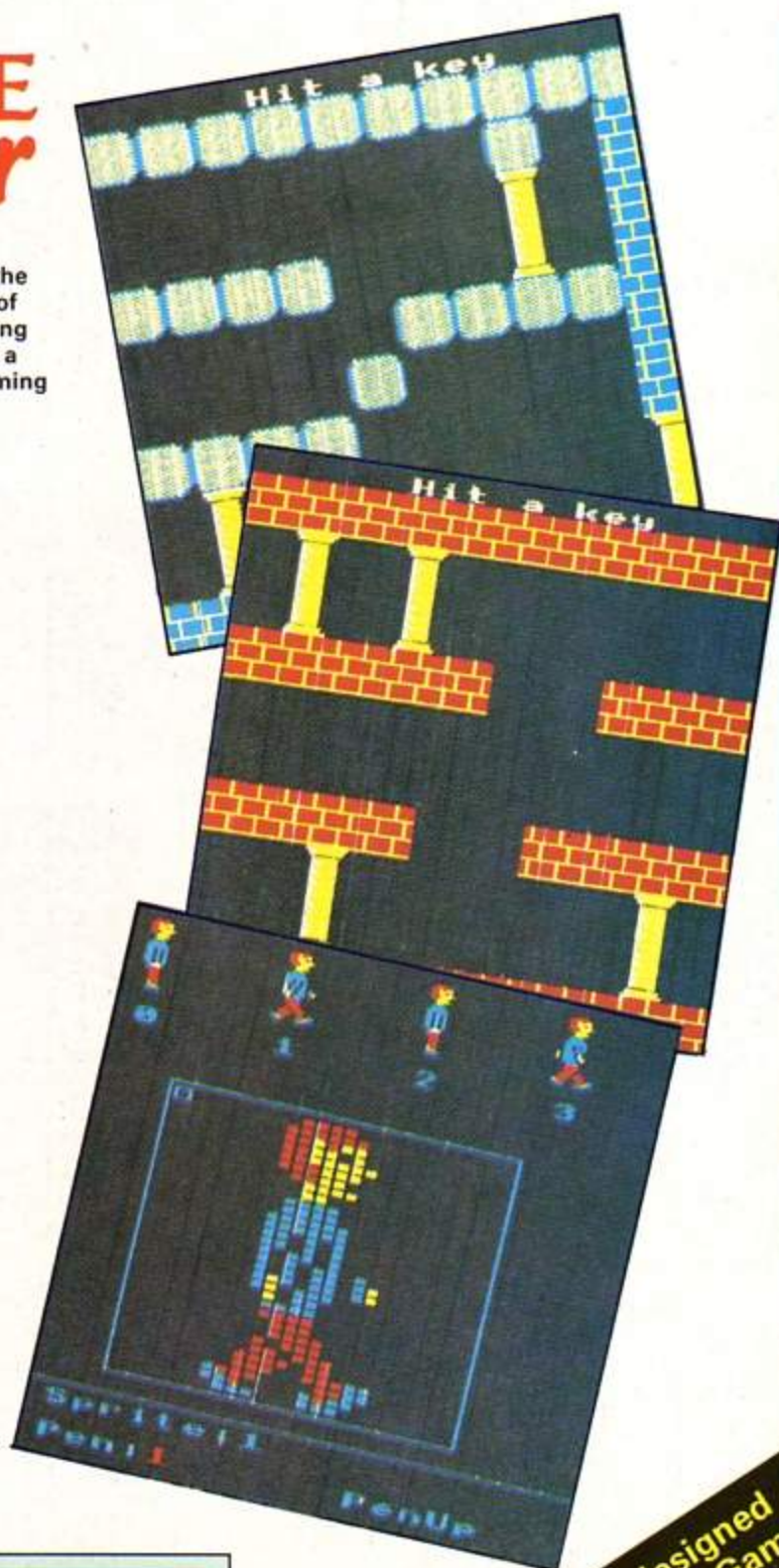
To help you make the most of the Arcade Game Creator, you will also get a comprehensive manual based on the original series.

Written in an easy to read style and with many illustrations and screen shots, it contains all the information you need to create and animate sprites, to design backgrounds and to link the two together into a complete arcade game.

If you are an aspiring games programmer, this is an offer you simply cannot afford to miss!

Arcade Game Creator

Tape + manual£9.95



Screens designed
using Arcade Game
Creator

TO ORDER PLEASE USE THE FORM ON PAGE 45

THE year is 2057 and robot technology is now well established. There are robot shop assistants, housemaids, factory workers, roadsweepers... you name 'em. People live a life of leisure now that most jobs have been robotised.

However, a disgruntled scientist at the robot manufacturing plant has been tampering with the three laws of robotics implanted into every robot's positronic brain. These state that:

- A robot must not harm a human being or through inaction, allow harm to come to one.
- A robot must always obey a command from a human being, provided this doesn't contravene the first law.
- A robot must not allow any harm to come to itself, provided this doesn't contravene the first two laws.

These prime directives have been deleted from the robots' brains and they're on the rampage causing havoc and destruction everywhere. They won't obey commands and have little regard for human life.

An elite squad of highly trained men, you among them, are assigned the task of destroying the renegades. Armed with a machine gun, you have to destroy as many

RENEGADE ROBOTS

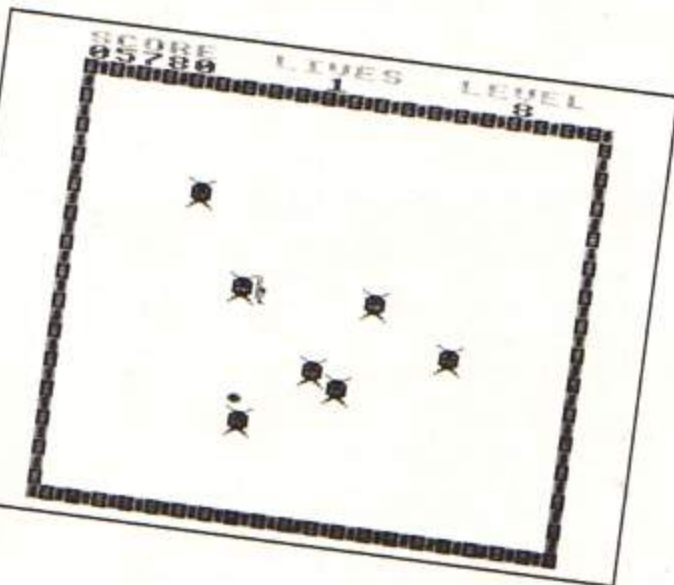
robots as possible. You can fire only in the direction you are facing, so if you are being chased you have to spin round quickly and fire.

Extra firepower can be picked up by running over the POW cannisters which enable you spray bullets all around by firing in eight directions at once. However, they last for only 20 shots so play it cool. Save it until there is only one robot left on the screen, then collect it and shoot the robot.

At the start of the next screen you'll then

**Anthony Houghton
whisks you into the
future to battle with
a robot army**

have 19 shots left which can be used to wipe out most of the mechanical monsters.
Good hunting.



```

10 REM Robokill
20 REM by A.Houghton
30 REM (c) Electron User
40 ENVELOPE1,1,20,10,-5,3,10,2
0,126,0,0,-126,126,126:ENVELOPE2,
1,20,-5,5,2,2,30,126,0,0,-126,126
,126:ENVELOPE3,1,1,2,-7,1,1,20,12
6,0,0,-126,126,126
50 *FX229,1
60 PROCassem:REPEAT:MODE5:VDU2
3,1,0;0;0;0;19,3,4;0::COLOUR1:PR1
NTTAB(6,2)"ROBOKILL":COLOUR2:PRIN
TTAB(2,5)"by Tony Houghton"
70 COLOUR1:PRINTTAB(0,20)"Pres
s SPACE to play":*FX21
80 REPEATUNTILGET=32:?:robots=4
:!:score=0:?:lives=3:level=1:?:speed
=248:?:diff=250:?:robh=0:?:powf=0
90 REPEAT:PROCscreen:CALLmain:
IF?dead=OPROCBonus:UNTILFALSE ELS
EIF?dead=27 UNTILTRUE:UNTILFALSE
100 IF?dead=OPROCBonus:UNTILFAL
SE ELSEIF?dead=27 UNTILTRUE:UNTIL
FALSE
110 FORNX=250TO200STEP-7:SOUND1
,1,NX,3:NEXT:?:lives=?:lives-1:IF?l

```

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◀ From Page 35

```

ives<=&FF CALLplvs
120 PROCd(130):?powf=0:UNTIL?l1
ves=&FF:VDU28,4,18,15,16,12,17,1,
26:PRINTTAB(5,17)"GAME OVER":PRO
Cd(300):UNTILFALSE
130 VDU28,4,18,15,16,12,17,1,26
:PRINTTAB(5,17)"GAME OVER":PROCd
(300)
140 DEFPROCbonus:FORN%10T0100S
TEP10:SOUND1,2,N%,2:NEXT
150 VDU28,4,18,15,16,12,17,1,26
:PRINTTAB(5,17)"BONUS":COLOUR2:
bonus=level*200:IFbonus>1200 bonu
s=1200
160 PRINTRIGHTS("000"+STR$bonus
,4):PROCd(40)
170 REPEAT:bonus=bonus-10:PRINT
TAB(11,17)RIGHTS("000"+STR$bonus,
4):SOUND810,0,0,0:CALLinsc:CALLp
sc
180 SOUND810,-15,6,1:UNTILbonus
=0:level=level+1:?diff=251-level
DIV3:IF?diff<246 ?diff=246
190 ?robh=0:?robots=3+level DIV
2:IF?robots>24 ?robots=24
200 IF?powf<255 ?powf=0
210 IF?speed<252 ANDlevel/2=lev
el DIV2 THEN?speed=?speed+1
220 PROCd(50):ENDPROC
230 DEFPROCscreen:CLS:XX=1:YY=1
6:F0RAX=&5A80T0&5B80STEP16:ins=&A
480000+AX:CALLprint:NEXT
240 F0RAX=&7EC8T0&7FE8STEP16:in
s=&A480000+AX:CALLprint:NEXT
250 XX=2:YY=8:F0RAX=&5A80T0&7EC
8STEP8280:ins=&A480000+AX:CALLpri
nt:NEXT
260 F0RAX=&5CF8T0&7FF8STEP8280:
ins=&A480000+AX:CALLprint:NEXT
270 ?manx=18:?many=13:F0RNX=0T0
23:N%?rob=0:NEXT:F0RNX=0T0?robot
s-1-?robh:N%?rob=8FF
280 REPEAT:XX=RND(37)-1:YY=RND(
27)-1:UNTILXX<160RXX>200RYX<110RY
X>15
290 N%?robh=XX:N%?rob=YY:N%?ro
bdx=N%MOD2:N%?robby=(N%MOD2)EOR1:
?tr=N%:CALLrobdir
300 CALLcalc:ins=!cad:?d=0:d?1=
&A:XX=2:YY=16:CALLprint:NEXT
310 COLOUR1:PRINTTAB(0,0)"SCORE
"SPC(2)"LIVES"SPC(2)"LEVEL":COLOU
R2:CALLpsc:PRINTTAB(16,1):level:C
ALLplvs
320 ?mandat=&C0:?mdx=0:?mdy=1:F
ORN%1T010:os=&6C98:XX=2:YY=16:P
ROCd(5):*FX19
330 CALLdelete:ins=&9C06C98:XX=
2:YY=16:PROCd(5):*FX19
340 CALLprint:NEXT
350 F0RNX=0T039:N%?bulf=0:NEXT:
IF?powf=0 ?powf=70
360 ENDPROC
370 DEFPROCd(Y%):TIME=0:REPEATU
NTILTIME>TX:ENDPROC
380 DEFPROCassem:RESTORE1340:F0
RN%=&900T0&5A5FSTEP4:READAS:IN%EV
AL("&"+AS):NEXT
390 DIMQX2000,xtab1 40,xtab2 40
,ytab1 30,ytab2 30,bulx 40,buly 4
0,budx 40,budy 40,bul4 40
400 F0RXX=0T036:AX=X%*8:xtab1?X
X=AXMOD256:xtab2?X=X%DIV256:NEXT
:F0RYX=0T027:AY=Y%*8:ytab1?YX=
AYMOD256:ytab2?YX=AY%DIV256:
NEXT
410 DIMrobx 24,roby 24,robdx 24
,robby 24,rob1 24
420 manx=&60:many=&61:mandat=&6
2:mdx=&63:mdy=&64:fx=&65:fy=&66:f
dx=&67:fdy=&68:ff=&69
430 ns=&70:d=&72:os=&74:cad=&76
:diff=&78
440 y=&7E:dead=&7F:tx=&80:ty=&8
1:speed=&82:tb=&83:tr=&84:seed=&8
5:robots=&86:robh=&87
450 IFINKEY=256=1THENTimer=&29F
ELSetimer=&2A0
460 F0RP=0T02STEP2:P%Q%COPTP

```

```

470 .sprite STXtx:STYty:JSRdele
te:LDXtx:LDYty:JMPprint
480 .print STYy:pr1 LDYy:pr1
2 DEY:LDACd),Y:STA(ns),Y:CPY#0:BN
Epr12
490 LDAd:CLC:ADCY:STAd:LDAns:CL
C:ADCH&40:STAns:LDAns+1:ADCH&1:STA
ns+1:DEX:BNEpr1:RTS
500 .delete STYy:del1 LDYy:LD
A#0:del2 DEY:STA(os),Y:CPY#0:BNEd
el2
510 LDAns:CLC:ADCH&40:STAns:LD
Ans+1:ADCH&1:STAns+1:DEX:BNEdel1:RT
S
520 .calc LDAtxtab1,X:CLC:ADCYta
bl,Y:STACad:LDAtxtab2,X:ADCYtab2,Y
:STACad+1:RTS
530 .manmv LDManx:LDMany:JSRc
alc:LDACad:STAns:LDACad+1:STAns+1
:LDAn0:STAtx:STAty
540 LDAn81:LDX#89E:LDY#8FF:JSR
&FFF4:TYA:BEQn1:LDAnmx:BEQn1:DEC
tx
550 .nl LDAn81:LDX#8BD:LDY#8FF

```



```

:JSR&FFF4:TYA:BEQn1:LDAnmx:CMF#3
6:BEQn1:INCTx
560 .nr LDAn81:LDX#8B7:LDY#8FF
:JSR&FFF4:TYA:BEQn1:LDAnmx:BEQn1
:DECty
570 .nu LDAn81:LDX#897:LDY#8FF
:JSR&FFF4:TYA:BEQn1:LDAnmx:CMF#2
6:BEQn1:INCTy
580 .nd LDAtx:ORATY:BNEmvman:JM
Pman:mvman LDAtx:CMF#8FF:BNEmf
l:LDAmndat:AND#83F:STAmndat:JMP
smd
590 .nmfl CMF#1:BNEmf:LDAmnd
at:AND#83F:ORAn840:STAmndat:JMPa
omd
600 .nmfr LDAty:CMF#8FF:BNEmfu
:LDAmndat:AND#83F:ORAn880:STAmn
dat:JMPsmd
610 .nmfu LDAmndat:AND#83F:ORA
#8C0:STAmndat
620 .smd LDAtx:STAmnd:CLC:ADCM
anx:STAmnx:LDAtx:STAmnd:CLC:ADCM
any:STAmny:LDAmndat:EOR#820:STA
mandat
630 .pman LDManx:LDMany:JSRc
alc:LDACad:STAns:LDACad+1:STAns+1
640 LDAmndat:STAd:LDAn9:STAd+1
:LDX#2:LDY#16:JMPsprite
650 .fire LDAtx:CLC:ADCFdx:STAF
x:LDAdfx:CMF#1:BNEmf:INCFx:.nfr
LDAty:CLC:ADCFdy:STAFy:LDAdfy:CMF
#1:BNEmf:INCFy
660 .nfd LDAtx:CMF#37:BCCokfx:.
nokf RTS:.okfx LDAty:CMF#27:BCCsno
kf
670 LDY#0:.sebl LDAbulx,Y:BEQfe
b:INX:CPY#39:BCCsebl:RTS:.feb LDA

```

```

fx:STAbulx,Y:LDAty:STAbuly,Y:LDAt
dx:STAbudx,Y:LDAdfy:STAbudy,Y:LD
A#0:STAbulx,Y
680 LDAtx:CMF#8FF:BEQrobif:LDAn
&40:JMPmanif:.robif LDAn7:LDX#las
e MOD256:LDY#lase DIV256:JSR&FFF
1:LDAn858:.manif STAd
690 LDYfx:LDYfy:JSRcalc:LDACad:
STAns:LDACad+1:STAns+1:LDAn&A:STA
d+1:LDX#1:LDY#8:JMPprint
700 .powf BRK:.powf BRK:.powf B
RK:.powf BRK
710 .shoot LDAn81:LDX#89D:LDY#
&FF:JSR&FFF4:TYA:BNEmsht:RTS:.msht
BITpowf:BMPowsh:LDAn880:STAff
:LDAmnx:STAff:LDAmny:STAff:LDAm
dx:STAff:LDAmny:STAff:JMPfire
720 .powsh LDAn880:STAff:LDAn&
FF:STAff:psl1 LDAn8FF:STAffdx:.p
sl2 LDAmnx:STAff:LDAmny:STAff:LD
Adfx:ORAdfy:BEQnpsd
730 JSRfire:npd INCfdx:LDAdfx
:CMF#2:BNEpsl2:INCFdy:LDAdfy:CMF#
2:BNEpsl1
740 DECPowt:BNEpsf:LDAn0:STApow
f:LDAn30:STApowt:.spf RTS
750 .lase EQUW2:EQUW3:EQUW80:EQ
UW2
760 .bullet LDY#0:STYtb:.bulp
LDAbulx,Y:BEQnbul:LDAbulx,Y:TAX
:LDAbuly,Y:TAY:JSRcalc:LDACad:STA
os:LDACad+1:STAns+1
770 LDYtb:LDAbulx,Y:CLC:ADCBudx
,Y:STAbulx,Y:CMF#37:BCCsebl:LDAbu
ly,Y:CLC:ADCBudy,Y:STAbuly,Y:CMF#
27:BCCnsebl
780 .debl LDAn0:STAbulx,Y:LDX#1
:LDY#8:JSRdelete:JMPnbul
790 .ndebl JSRhit:LDAbulx,Y:BEQ
nbul:LDAbulx,Y:CMF#8FF:BEQrobif:LD
An&40:JMPmanb:.rob LDAn858:.man
b STAd
800 LDAbulx,Y:TAX:LDAbuly,Y:TAY
:JSRcalc:LDACad:STAns:LDACad+1:ST
Ans+1:LDAn&A:STAd+1:LDX#1:LDY#8:J
SRsprite
810 .nbul INCTb:LDYtb:CPY#40:B
CCbulp2:RTS:.bulp2 JMPbulp
820 .hit LDAbulx,Y:CMF#8FF:BEQr
obbul:LDX#0:.hit1 LDAbulx,Y:BEQn
hit1:LDAbulx,Y:SEC:SBCCrobx,X:CMF#2
:BCSnhit1:LDAbuly,Y:SEC:SBCCrobby,X:
CMF#2:BCSnhit1
830 STXtr:LDAn0:STAbulx,Y:STAr
obf,X:LDX#1:LDY#8:JSRdelete:LDXtr:
LDAruby,X:TAY:LDAruby,X:TAX:JSRca
lc:LDACad:STAns:LDACad+1:STAns+1
:LDX#2:LDY#16:JSRdelete
840 LDAn7:LDX#zap MOD256:LDY#za
p DIV256:JSR&FFF1:JSRinsc:INCrobh
:JSRpsc:LDXtr:LDYtb:.nht1 INX:CPX
robots:BCChit1:RTS
850 .robull LDAbulx,Y:SEC:SBCCma
nx:CMF#2:BCSnhit2:LDAbuly,Y:SEC:SB
Cmany:CMF#2:BCSnhit2:LDAn0:STAbulx
,Y:LDAn&FF:STAdad:.nht2 RTS
860 .zap EQUW17:EQUW1:EQUW220:E
QUW5
870 .mvrobs LDY#0:STAtx:.robml
LDAruby,Y:BEQnrobs:JSRrandom:AND#
3:BNEdcd:JSRrobdir:.dcd JSRrobm
v
880 .nxrob INCTr:LDYtr:CPY#robot
s:BCCrobml:RTS
890 .random LDAsced:ROLA:ROLA:R
OLA:SEC:ADCSced:EORtimer:STAsced:
RTS
900 .robmv LDYtr:LDAruby,Y:TAX:
LDAruby,Y:TAY:JSRcalc:LDACad:STAO
s:LDACad+1:STAns+1
910 LDAn0:STAd:LDAn&A:STAd+1:LD
Ytr:JSRrobc:BCCprobb:JSRrobdir
920 .prob LDAruby,Y:CLC:ADCrubd
x,Y:STAruby,Y:TAX:LDAruby,Y:CLC:A
DCrobby,Y:STAruby,Y:TAY
930 JSRcalc:LDACad:STAns:LDACad
+1:STAns+1:LDX#2:LDY#16:JSRsprite
940 JSRrandom:CMFdiff:BCCrobsht
:RTS:.robsh LDYtr:LDAn&FF:STAff:
LDAruby,Y:STAff:LDAruby,Y:STAff

```

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MICRO MESSAGES

I MAY be able to offer a glimmer of hope to Kenneth MacLeod who wrote in August's issue for help with a corrupted disc containing valuable files. I have a disc recovery program which enables me to search through a disc track by track, sector by sector and resave any programs or parts of programs I can find to a new disc.

During operation it keeps pausing and waits for a key to be pressed after each section of data has been displayed on screen.

If Mr MacLeod has a program like this, but is unable to get it running because the first sector of the disc has been so badly corrupted that the format cannot be read, he should replace the corrupted disc with a good one and start the recovery program running.

It will read the format and he should continue scanning through the disc until the first sector has been read. Now, while the computer is waiting for a key to be pressed, he should replace the good disc with the corrupted one and press a key.

The computer will be fooled and carry on scanning the disc from sector two onwards. Of course if his disc is severely corrupted and error messages keep appearing it would not be wise for him to continue. — **Joan Barnard, Buckhurst Hill, Essex.**

● Thanks for the tip Joan. Our technique is to use a disc formatter. Run it and hit the Break key immediately after the first track has been formatted. Now you can use a disc editor to recover the contents. The only drawback here is that if the program you lost is stored on the first track it will be permanently destroyed, so your technique is much better as it leaves the original disc intact.

Several good disc toolkit programs are available. One of the best is Advanced Disc Toolkit from Pres.

Escape route from lock-ups

I HAVE been using an Electron for two years, primarily as a word processor. I have a Plus 1, AP4, View cartridge, single Cumana 5.25in disc drive and a Silver Reed EX34 typewriter operating as a printer.

I use it for normal correspondence, writing magazine articles and, more recently, have produced the text of two small books.

Soon after I upgraded the system I ran into an occasional fault when entering text. It would no longer be accepted, the cursor

Winkle out those lost files

would stop flashing and the => symbol would appear.

Escaping to the command page and then back to the text page would enable me to input again, but about half the last line of text would have disappeared.

I now find that sometimes I cannot Escape as I did before, and have got around this problem by using the Break key. This has to be frequently pressed before anything happens. I get to a command page which reads Acorn Electron DFS and I then press Break to get back to the normal command page.

Usually I don't lose the text, but the last time I tried it I did. I now save more often. What can I do? — **Michael Ingham, Lincoln.**

● It is possible that you are experiencing trouble with the ULA chip. Keith Watts remedied his, he reported in our November 1988 issue, by opening his Electron, removing the ULA, sliding it back and forth in the carrier, then replacing it. However, never do this while the micro is plugged into the mains.

Advice needed on upgrades

I AM another computer-ignorant mum who could do with some advice. My two sons have an Electron which they have tired of as it is. We would like to buy a disc drive, but have no idea where we could get one, and more importantly, the cost.

Another problem is what we can do with our games tapes. If we get a disc drive can we transfer them from tape to disc?

We would also like to extend the computer's memory, which I'm told we can do with add-ons. However, again we need advice on what to buy, where to obtain it and the cost. Please can you help? — **Christine van Oorschot, Mold, Clwyd.**

● You will need to buy a Plus 1 and a disc interface in order to use a disc drive. All of these can be obtained from Pres who advertises every month in *Electron User*.

The cost of the equipment would vary, depending on which models you bought, but you could expect to pay somewhere in the region of £200. You have a choice of a 5.25in

Looking for Lisp lore

I HAVE been an *Electron User* reader for many years and I recently bought a copy of the Lisp programming language on rom. I have tried without success to obtain a copy of the book *Lisp Programming on the BBC Micro*. Could you or any reader help me? — **A. Ghafoori, London.**

● We can't find anyone advertising the book. However, Watford Electronics (0923 37774) advertise one called Lisp, the Language of Artificial Intelligence, which costs £13.95. This may help.

You'll find a Lisp programming tutorial in the June, July and August 1987 issues of *Electron User*.

DFS or 3.5in ADFS system.

If you are primarily interested in games then go for the 5.25in system as besides being more available on this format you also have an opportunity to try out some BBC Micro software too. Not all of it will run of course, but some does.

Unfortunately, as most commercial games are copy protected you won't be able to transfer very many of them to disc. However, Pres is currently converting around 50 Superior Software titles to disc. Expect to see these in the run up to Christmas.

To extend the memory of your Electron to 64k we recommend the Master Ram Board which is available from Slogger for £49.95. Alternatively, a ram cartridge will add sideways ram, which is useful for rom software.

The Master Ram Board has the added advantage of speeding up the Electron to almost that of the BBC Micro.

Misleading instructions

A WHILE ago I was playing *Space Harrier* on a friend's Atari ST when I noticed that instructions were also given for a BBC/

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◀ From Page 38

Electron version.

I wrote to Elite asking whether it was still available, as I didn't even know that it existed for the Electron. However, I didn't receive a reply and I can find no trace of it in the shops or mail order adverts. Do you know where I could obtain a copy? — Christian Weber, Chester.

● Space Harrier isn't available for the Electron. We don't know why there would be instructions for it — perhaps it had been planned and then the project was shelved before completion. Perhaps if enough Electron users write to Elite it will continue with its production.

Programs you can copy

I HAVE subscribed to Electron User for several years, and am very grateful for the free monthly tape. I have begun saving some of the recent games on our school's BBC Micro network but my teacher has doubts since there is a copyright symbol in each program.

Please could you tell me whether or not I am allowed to save them on the Econet? If not, I will wipe them, much to the disappointment of many friends who find them great fun — and a relief from word processing. — Simon Dedley, Kettering, Northants.

● We don't mind you using the programs at school as long as the copyright message stays on them and you are not making a profit by selling them.

Bear in mind that some of the programs published need instructions that can only be found in the magazine — so order a few extra copies for your school mates!

Giant step for an Electron

I HAVE been the owner of an Electron for nearly five years. It was originally bought to get the children interested in computing, but ended up being used only for games.

Lately I have been using an Apple Macintosh and an IBM PC for my work, mainly for producing spreadsheets and graphs using an excellent program called Exel Windows. I find this very helpful to collate and display data.

Is there a program of similar nature designed for the Electron? If so what hardware would I need to run it? What would I need to print it? Is it possible to use a mouse?

At present I only have the basic computer with an Acorn data recorder and a television with an RGB lead. Does Mini Office compare at all with Exel Windows? Finally, what will it all cost? — V.J. Moore, Peterborough.

● A humble Acorn Electron can't be com-

All programs printed in this issue are exact reproductions of listings taken from running programs which have been thoroughly tested.

However, on the very rare occasions that mistakes may occur corrections will be published as a matter of urgency. Should you encounter error messages when you type in a program they will almost certainly be the result of your own typing mistakes.

Unfortunately we can no longer answer personal programming queries concerning these mistakes. Of course, letters about suggested errors will be investigated without delay, but any replies found necessary will only appear in the mail pages.

pared to an Apple Mac system or even a PC. These two computers have a computing power several orders of magnitude greater than our micro. The software is correspondingly more powerful.

The most powerful Electron spreadsheet is Viewsheets, and at around £10-15 is very cheap indeed. Although far less powerful, Mini Office spreadsheet is still very useful for simple home accounts. The package consists of four programs — word processor, database, spreadsheet and graphics.

You won't need any further hardware to run Mini Office, although an Epson-compatible printer would be required to print any work. It is not possible to use a mouse with Viewsheets or Mini Office.

After having used Excell windows on a Mac you'll probably find Electron software too primitive to be of any practical use.

Listings were not guilty

I AM writing to complain about the majority of programs you put into the magazine. They do not work.

My father and I spend many an evening typing into the computer, and when we run them we get syntax errors or no such variable messages. The latest such program is Niel Cunningham's On to a Winner, from July's issue.

After checking through the program twice we come to the conclusion that there is an error in the listing. Why do so many of these programs not work? — Stewart McWilliam, Wigan.

EACH month I look forward to Electron User. I have retired and it gives me great pleasure to use my computer.

I find the magazine a great help because I have not been taught anything about the computer. It gives me great pleasure to use some of the information and programs pub-

lished.

I would appreciate it if someone could assist me concerning your Bingo game from the August issue. I have a Panasonic printer KX-P1081 and find it difficult to get the printer to print the cards.

I think that some of the printer instructions must be changed. As I am not an expert I would like someone to advise me what to do in relation to this particular machine. — F.J. Campbell, Gateshead, Tyne & Wear.

● We receive a number of similar letters each month. However, we can assure you that there isn't anything wrong with either of the listings published. In fact we have letters from other readers who have enjoyed using the programs.

Usually, we find that the program has been typed incorrectly. Check that you haven't misread a character for a similar looking one, such as a 0 for an O or an I instead of a 1.

On the odd occasions that there is an error you will find corrections printed in Micro Messages. The Bingo cards program was tested on the same Epson compatible printer that Mr Campbell uses.

Sister, but not a twin

DO you know what has happened to US Gold? I'm sure it would stand to gain enormous profit if it released Beach Head and Impossible Mission as budget games. And why doesn't it release Gauntlet for the Electron? (I'm with you Andy Duncan, May 1989).

Could you tell me what the main differences are between the BBC Micro and the Electron when it comes to software? Both have 32k memory but some games, such as Return of the Jedi and Moon Cresta, aren't available for the Electron.

Many thanks to Superior Software for releasing Commodore and Spectrum games such as Predator and Barbarian II. The biggest thanks go to you for bringing a very informative and varied magazine to my letterbox. My gratitude for the Supercharger program in the February issue.

Lastly, why not do some short reviews on old games? You would be able to regrade them and it may make Electron users think twice before buying an old game which has Electron User Golden Game written on it. — B. Morris, Doncaster, South Yorkshire.

● US Gold hasn't published software for the Electron for some time now. It is concentrating more on the 16 bit Atari ST, Commodore Amiga and Achimedes markets.

There are massive hardware differences between the Electron and BBC Micro. The innards are totally different, so any program directly accessing certain chips or ports may fail. The BBC Micro is faster and more flexible than the Electron which means that some games can't be converted.

Learning has never
been such fun!

fun school

Fun School 2 for Over-8s contains:

- **Build a Bridge:** Shape-fitting challenge
- **Passage of Guardians:** Enjoy anagrams
- **Unicorn:** First steps in problem solving
- **Logic Doors:** Mapping made easy
- **Souvenirs:** An introduction to travel
- **Code Boxes:** Discover binary arithmetic
- **Mystery machine:** Have fun breaking codes
- **Escape:** A final check on progress

Fun School 2 for 6 to 8 year olds contains:

- **Number train:** Calculations made enjoyable
- **Shopping:** Which shops for which products?
- **Maths Maze:** Fun improving arithmetical skills
- **Treasure Hunt:** Introduction to coordinates
- **Bounce:** Get to grips with angles
- **Packing:** Discover tessellating shapes
- **Caterpillar:** Word building challenge
- **Number jump:** Have fun practising tables

Fun School 2 for Under-6s contains:

- **Shape Snap:** Colourful shape recognition
- **Find the Mole:** Experiment with number sizes
- **Teddy Count:** Ideal introduction to numbers
- **Write a Letter:** Creative fun at the keyboard
- **Colour Train:** Play at spotting colours
- **Pick a Letter:** Word building made easy
- **Spell a Word:** Enjoy naming the pictures
- **Teddy Bears Picnic:** Move around a maze

Now children can really have fun while learning. Fun School 2, designed by a team of education-ists, is available for three age groups: Under-6s, 6-8 year olds and Over-8s. Each pack comes with eight colourful and exciting programs, a colourful button badge and detailed instructions giving educational help.

The computer itself monitors the child's progress. The skill level - initially set by parents - is automatically adjusted to suit the child's ability.

Now children can enjoy using their parents' computer while they learn at their own pace.

Available for:

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£9.95 (tape) £12.95 (disc).

Also: Atari ST, Amiga, PC £19.95

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Amstrad CPC	6179	6180	6181	6182	6183	6184
BBC Micro/Electron	2239		2242		2245	
BBC B+/Master 40T		2240		2243		2249
BBC B+/Master 80T		2241		2244		2250
Atari ST		9192		9193		9194
Amiga		9842		9843		9844
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PC 3.5"		5767		5768		5769

Please circle the code number of the format you require

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☐ Please debit my Access/Visa card no.

Expiry date

Signed

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"ACP is much better than any of the other front end systems I've seen." - *Acorn User, August 1987*

"I can recommend it to anyone who wants easy access to the Electron's functions." - *Electron User, August 1987.*

ACP's main features are:-

- * Pull down windows operate throughout
- * Floating point calculator
- * Users can create their own windows
- * File manager
- * Simple to change MOS's configure options
- * Floating point calculator
- * Easy entry to other languages

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An alternative to the DFS on rom for Plus 3 and ABR users. This optional alternative DFS is designed for use in Side-ways RAM (ABR) and allows the user to operate a disc filing system & E88 when using the Plus 3 (in ADFS page would normally be &1D88). The DFS is simply loaded using the software supplied with the ABR from disc. (3.5" ADFS disc + manual)

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The ultimate 'front-end' for ADFS and DFS includes:

- Menu** - infinitely expandable
- Delete** - deletes any number of files
- Rename** - rename multiple files using wildcards
- Copy** - extremely comprehensive file copier

Advanced File Manager 1.00 for PRES 1988

Source	Advanced Disc FS (16K Software AFM.afm18)	Target	Advanced Disc FS (16K Software AFM.afm18)
128	128	128	128
129	129	129	129
130	130	130	130
131	131	131	131
132	132	132	132
133	133	133	133
134	134	134	134
135	135	135	135
136	136	136	136
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138	138	138	138
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194	194	194	194
195	195	195	195
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197	197	197	197
198	198	198	198
199	199	199	199
200	200	200	200

Screen picture shows AFM in Copy mode on Master Turbo

AFM follows the PRES 'Master Plan' of upwards compatibility - it runs on Electron, BBC B+, B+128, Master 128 and Compact, with Second/Co-processors and Acorn-compatible versions of DFS & ADFS. £25 ex VAT £28.75 inc VAT

AFM has four distinct modes:

MENU - allows browsing through the files and directories on a disc. Files are started from a menu of up to 7 options chosen for a selected ROM. Loaders are provided for Basic, The Basic Editor, View, ViewSheet, ViewStore, ViewSpell, Edit, Wordwise (+) and InterWord. This list can be expanded infinitely using an Acorn-approved OSWORD call. . . full details and example in the manual.

DELETE - allows files to be marked and then deleted with one keystroke.

RENAME - allows one or more files to be marked and then renamed using a wildcarded name, ie one which varies with each file renamed. Thus you could rename s1, s2 and s3 to be s1_old, s2_old, and s3_old in one operation. . . and that's only the beginning! As well as using the whole of the original name you can also pick out individual characters to form part of the new name.

COPY - the strongest feature of AFM. It is a two stage copy routine. With both source and target directories shown on screen the files to be copied are marked. Once all the files have been marked copying is started and the computer can be left to get on with it!

Large files can be split across several disks, and recombined. As much as possible of the computer's memory is used for copying files, including unused parts of shadow screen memory, sideways ram banks (inc. AP7), ram cartridges (inc. ABR (32K) and AQR (256K)), tube memory (up to 61K), B+ paged ram (12K) and unused parts of the Slogger Master Ramboard (Electron).

Comprehensive error trapping and recovery is provided, so a copying run will rarely have to be aborted unfinished! And there's much, much more. . .



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Play It Again Sam	✓	✓
(Contains Citadel, Thrust, Strikers Run, Ravenskull)		
Palace of Majic	✓	✓
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(Contains Synchron, Repton, Repton II, Karate Combat, Deathstar, Smash & Grab & Overdrive)		
Codename Droid	✓	✓
Crazy Rider	✓	✓



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2. Supply Acorn based or Acorn compatible products & to enable upward compatibility wherever possible.
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5.25" ADFS (manual avail. sep.) £14.00 ex VAT; £16.10 inc VAT

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Don't miss out on the mass of material that's appeared in *Electron User* over the past few months. Bring yourself up to date with this back issue bundle, packed with games, utilities, features and programming tutorials.

Here's what you'll find in the
April 1989 – September 1989 bundle:

April 1989 issue:

Games: Diamonds – a mind bending puzzle. **Utilities:** Pattern fill routine, automatic program saver, Home Finance Manager. **Features:** Input routines explained, disc drives revealed, palindromic numbers explored. **Reviews:** Sam 6, Exile, Orbital.

May 1989 issue:

Games: Eliminator. **Utilities:** EZ Type, DFS disc formatter. **Features:** Tournament sorts, Party Cocktail Creator, Landscape Designer, Fractal Generator. **Reviews:** Barbarian II, Circus Games, Superman, Mode 7 Simulator Rom.

June 1989 issue:

Games: Tic Tac Rhymes, Duel. **Features:** ADFS osword calls explained, creating customised tapes, maps to Woodbury End and Palace of Magic. **Utilities:** Disc-based database, new CIRCLE graphics command, Morse Code Tutor. **Reviews:** Holed Out, Tank Attack, Sam 7.

July 1989 issue:

Games: Jet Bike arcade adventure, educational fun with Ladder Adder, Time bomb arcade fun. **Utilities:** Speedy Reader. **Reviews:** Predator, Stormcycle, Sam 8. **Features:** Jafa Systems interview, Disc error codes documented, 10 Liners, Philosophers Quest and Palace of Magic mapped.

August 1989 issue:

Games: Rollerball, Bingo. **Reviews:** Alps, Turtle Worlds, White Magic, Play it Again Sam 9. **Features:** Map of Kayleth, Repton Infinity tips. **Utilities:** Disc Housekeeper, Mode 2 screen compacter, Titration, Chemical Equations.

September 1989 issue:

Game: Snakes. **Reviews:** Keyword, Basic Editor Plus, Ballistix, Sam 10. **Features:** Arcade Corner, Electron history. **Utilities:** Attribute editor, magazine database.

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Catalogue of errors

HOW many times have you typed **>** by accident when trying to catalogue a disc? If the answer to that is "Quite often" this handy utility from Stephen Wade of Stockport, Cheshire is just for you.

The program assembles a very short piece of 6502 machine code which, when stored in the correct place on the disc, can be used to repair the error as it occurs.

Rather than intercepting the main oscli routine in the computer, which would take up much valuable memory space, the utility is called up from disc

```
10 REM Repair for > error
20 REM by S.P.Wade
30 FOR pass=0 TO 3 STEP 3
40 PX=&900:COPT pass
50 LDX #cat MOD 256
60 LDY #cat DIV 256
70 JMP &FFF7
80 .cat EQU &"CAT"+CHR$13
90 J: NEXT
100 OSCLI"SAVE > 900 "+STR$PX
```

whenever the **>** error occurs.

Because the flaw in the command is the **>** character the object code should be saved with the filename **>** in the li-

brary directory, so that the computer can locate it no matter which directory you happen to be in. (You can make the program automatically save the code in your library directory by simply altering line 100.)

Whenever you type **>** the object code will be loaded into memory, starting at location &900, where it is then executed. Its function is to perform a ***CAT** by way of an oscli command and following that the code returns you to whatever you were doing before.

So there you have it – a simple problem simply rectified! Happy cataloguing.

Thanks for the memory...

```
10 REM Display free memory
20 REM by S.P.Wade
30 FOR pass=0 TO 3 STEP 3
40 PX=&900:COPT pass
50 LDY #0:loop1 LDA str1,Y:CM
P #&FF:BEQ next1:JSR &FFEE:INY:JM
P loop1:next1 LDA &06:SEC:SBC &0
2:TAX:LDA &07
60 SBC &03:JSR hex1:TXA:JSR he
x1:LDY #0:loop2 LDA str2,Y:CM
P #&FF:BEQ next2:JSR &FFEE:INY:JMP l
oop2:next2 RTS
70 .str1 EQU &0A0D:EQU &"Memor
y free = &":EQU &FF:.str2 EQU &"
bytes":EQU &0A0D0A0D:EQU &FF
80 .hex1 PHA:AND #240:LSR A:RO
R A:ROR A:ROR A:JSR hex2:PLA:AND
#15
90 .hex2 CLC:ADC #48:CM
P #58:BC
CC hex3:CLC:ADC #7:.hex3 JMP &FFE
3:J: NEXT
100 OSCLI"SAVE MFree 900 "+STR$
PX
```

OUR second utility this month also comes from Stephen Wade. This time he provides a program which reports how much free memory is left in the micro.

Anyone with a disc drive will no doubt have used the ***FREE** command from time to time to find out how much space is left on their disc. Well this program, called by typing ***MFree**, tells us the number of free bytes of memory we have in hexadecimal format.

The program works by taking a look at the zero page locations for HIMEM and VARTOP, and from them works how much space there is in between.

You may wonder why the program

is so bulky, and the answer is that the two routines that print the text are quite long. Nevertheless the program is still only 10 lines long.

You will find, of course, that the amount of free space will vary quite considerably in different modes – that is, you will have more free space in Mode 6 than in Mode 1 due to the different amounts of screen memory used.

In order to be able to use the program at any time from the disc, it is suggested that – like the cat repair utility – you store the object code in your library directory. You can again set the program to save the code automatically in the correct directory by altering line 100 as required.

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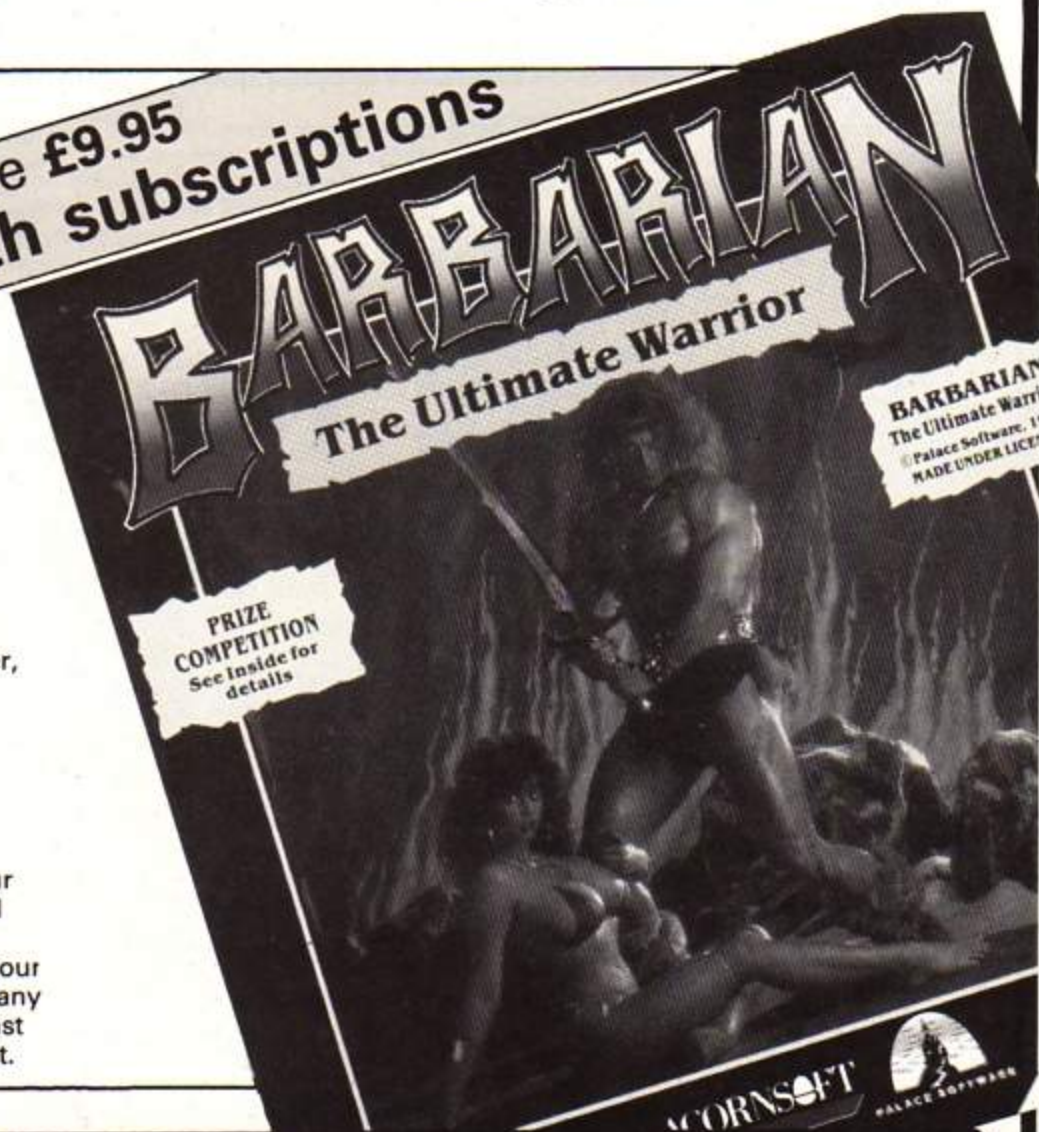
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950 LDArobx,Y:SEC:SBCmanx:BEQhr
osh:BCCroshr:LDA#&FF:JMPhrshr:ro
shr LDA#1:hrshr STAfdx
960 LDAroby,Y:SEC:SBCmany:BEQvr
osh:BCCroshd:LDA#&FF:JMPvrshr:ro
shd LDA#1:vrshr STAfdy:JMPfire
970 .robdir LDYtr:LDArobdx,Y:BN
Evert
980 JSRfolhor:BCCrts:JSRfolver:
BCCrts:JSRawahor:BCCrts:JMPawaver
990 .vert JSRfolver:BCCrts:JSRf
olhor:BCCrts:JSRawaver:BCCrts:JMP
awahor:rts RTS
1000 .folhor LDYtr:LDA#0:STARobd
y,Y:LDArobx,Y:CMpmanx:BCSrlft:BC
Crright
1010 .awahor LDYtr:LDA#0:STARobd
y,Y:LDAroby,Y:CMpmanx:BCSrright
1020 .rlft LDA#&FF:STARobdx,Y:J
MProbc
1030 .rright LDA#1:STARobdx,Y:JM
Probc
1040 .folver LDYtr:LDA#0:STARobd
x,Y:LDAroby,Y:CMpmany:BCSrup:BCCr
down
1050 .awaver LDYtr:LDA#0:STARobd
x,Y:LDAroby,Y:CMpmany:BCSrdwn
1060 .rup LDA#&FF:STARobdy,Y:JMP
robc
1070 .rdwn LDA#1:STARobdy,Y
1080 .robc LDArobx,Y:CLC:ADCrobd
x,Y:CMp#37:BCSeorc:LDAroby,Y:CLC:
ADCrobdy,Y:CMp#27:eorc RTS
1090 .mhr LDY#0:mhrL LDArobf,Y:
BEQnxmhr:LDArobx,Y:SEC:SBCmanx:CL
C:ADC#1:CMp#3:BCSnxmhr
1100 LDAroby,Y:SEC:SBCmany:CLC:A
DC#1:CMp#3:BCSnxmhr:LDA#&FF:STAd
e:dxmhr INY:CPYrobc:BCCmhrL:R
TS

```

```

1110 .score EQU00:lives BRK
1120 .insc SED:LDAscore:CLC:ADC#
1:STAscore:LDAscore+1:ADC#0:STAsc
ore+1:CLD
1130 LDAscore:BNEnlv:LDAscore+1
:AND#1:BNEnlv:LDA:lives:CMp#9:BEQ
nlv:INCLives:JSRplvs:nlv RTS
1140 .psc LDA#30:JSR&FEE:LDA#10
:JSR&FEE
1150 LDAscore+1:JSRbyte:LDAscore
:JSRbyte:LDA#48:JMP&FEE:byte TA
X:LSRA:LSRA:LSRA:LSRA:JSRnib:TXA:
AND#&F:nib CLC:ADC#48:JMP&FEE
1160 .plvs LDA#31:JSR&FEE:LDA#9
:JSR&FEE:LDA#1:JSR&FEE:LDA:lives
:JMPnib
1170 .pow LDApowf:BNepow2:DECpow
t:BEQpow1:RTS
1180 .pow1 JSRrandom:AND#31:CLC:
ADC#2:STApowx:JSRrandom:AND#15:CL
C:ADC#5:STApowx:LDA#50:STApowt:LD
A#1:STApowf
1190 LDA#7:LDA#pows1 MOD256:LDY#
pows1 DIV256:JSR&FEE1:JMPpow3
1200 .pow2 BITpowf:BPLpow3:RTS
1210 .pow3 LDYpowx:LDYpowx:JSRca
lc:LDAmanx:SEC:SBCpowx:CLC:ADC#1:
CMp#3:BCSpow3a:LDAmanx:SEC:SBCpow
y:CLC:ADC#1:CMp#3:BCSpow3b
1220 .pow3a DECpowt:BEQpow3c
1230 LDAcad:STAns:LDAcad+1:STAns
+1:LDA#&20:STAd:LDA#&A:STAd+1:LDX
#2:LDY#16:JMPprint
1240 .pow3b LDA#7:LDA#pows2 MOD2
56:LDY#pows2 DIV256:JSR&FEE1:LDA#
&FF:STApowf:LDA#20:STApowt:JSRins
c:JSRinsc:JSRpsc:JMPpow3d
1250 .pow3c LDA#0:STApowf:LDA#70
:STApowt
1260 .pow3d LDAcad:STAns:LDAcad+
1:STAns+1:LDX#2:LDY#16:JMPdelete
1270 .pows1 EQUW3:EQUW2:EQUW0:EQ
UW5:.pows2 EQUW3:EQUW2:EQUW3:EQ

```

```

W5
1280 .main LDA#0:STAddead:LDAspee
d:STATimer
1290 .mainloop LDA#&81:LDX#&8F:L
DY#&FF:JSR&FFF4:TYA:BEQnasc:LDA#2
7:STAddead:RTS:.nasc
1300 JSRmanmv:JSRbullets:JSRmhr:
JSRshoot
1310 JSRwait
1320 JSRbullets:JSRmrvrobs:JSRmhr
:JSRpow:JSRwait:LDArobh:CMProbots
:BCSdone:LDAdead:BEQmainloop:.don
e RTS:.wait BITtimer:BMIwait:LDAs
peed:STATimer:RTS
1330 JNEXT:ENDPROC
1340 DATA12703103,7070310,84840C
08,E0E0C80,70717FF,30100003,E0E0E
8E,8080800C,12703103,7070310,8484
0C08,E0E0C80,70717FF,60202003,E0E
0E8E,C040400C
1350 DATA12120301,7070310,84E0C8
0C,E0E0C80,7070717,10101003,E0E8E
FF,C080000C,12120301,7070310,84E0
C80C,E0E0C80,7070717,30202003,E0E
8EFF,6040400C
1360 DATA21030303,7070310,480C0C
0C,E0E0C80,7074767,60202003,E0E0
E2E,60400C,21030303,67070310,480C
0C0C,E0E0C80,7070747,602003,E0E2E
6E,6040400C
1370 DATA30121303,47470310,C0848
C0C,2E0E0C80,70747AF,602003,E2E5F
2E,6040400C,30121303,47070310,C08
48C0C,2E2E0C80,747AF47,60202003,E
0E2E5F,60400C
1380 DATA33314080,77755777,CCC82
D10,EEEEAE,33775747,80406031,CC
EE6E2E,102060C8,25163030,F2B6B596
,E2E2C0C,F8F8F0F0,F0F0F1F2,30307
474,1E1E5AF8,C0C0E0DE
1390 DATAF060000,60F0F0,0B8BDBFF,
F8BDBDBB,6B6B6B0F,F6B6B6B,F0F0600
0,60F0

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WHITE MAGIC 2 (The Fourth Dimension)

Following the success of the superb White Magic, The Fourth Dimension have now released an easy to use level designer plus 32 new challenging levels. The designer allows you to create infinite numbers of screens and the new levels are harder than the originals for those who are ready for a real challenge.
Prices Below.

E-Type (The Fourth Dimension)

3D CAR RACING FOR THE ARCHIMEDES
E-Type has been programmed by the author of Holed Out. It's an incredibly thrilling game allowing you to race a gleaming £70,000 E-Type at speeds over 150mph. Drive through hills, lanes and valleys with varying backdrops. The digitised graphics and sound effects are unbelievable - it's an absolute must.

ARCHIMEDES GAMES

E-Type (The 4th Dimension)	19.95	Avon & Mordac (Topological)	18.95	Giant Killer (Topological)	18.95
E-Type Designer (The 4th Dimension)	16.95	Acheton (Topological)	18.95	Freddy's Folly (Minerva)	11.95
White Magic (The 4th Dimension)	19.95	Enthar 7 (Robico)	25.95	Alerion (Dabs Press)	12.95
White Magic 2 (The 4th Dimension)	19.95	Word Up & Word Down (Gem)	16.95	Terramex (Grandslam)	15.95
Holed Out (3D Golf) (4th Dimension)	19.95	Pacmania (Grandslam)	15.95	Hoverbod (Minerva)	11.95
Holed Out Extra Courses Vol 1	16.95	Jet Fighter (Minerva)	11.95	Missile Control (Minerva)	11.95
Holed Out Extra Courses Vol 2	16.95	Corruption (Rainbird)	19.95	Thundermonk (Minerva)	11.95
Cheat It Again, Archie (Impact)	9.95	Fish (Rainbird)	19.95	Minotaur (Minerva)	11.95
Quazer (Impact Software)	9.95	Fireball (Godax)	15.95	Isix The Viking (Minerva)	16.95
Startrader (Gem)	16.95	Orion (Minerva)	11.95	Fugitives Quest (Robico)	25.95
Return to Doom (Topological)	18.95	3D Pool (Firebird)	19.95	Rise in Crime (Robico)	25.95

HOLED OUT EXTRA COURSES

Due to overwhelming public demand The 4th Dimension has now produced 2 volumes of extra courses for their superb 3D golf game Holed Out. Each volume contains 2 superbly designed brand new courses plus the original Holed Out program, therefore you do not need the original Holed Out in order to play them.

- "I play golf and this game is the closest thing I've seen to the real game on a computer." Archie, June 1989
- "I wouldn't have thought it possible to get a better simulation out of the box." BBC Acorn User, June 1989
- "The 3D perspective graphics are stunning." Electron User GOLDEN GAME June 89
- "Holed Out is great... The game plays very well and the graphics are superb." Popular Computing Weekly, March 1989
- "The best golf simulation I've ever seen on any Acorn machine." The Micro User, June 1989
- "The Electron version is brilliant - it's almost the same as playing at Gleneagles. Unreservedly recommended."

A & B Computing Game of the Month, June 1989

Prices above and opposite

ARCADE SOCCER (The Fourth Dimension)

A brilliant soccer game of the quality that only The Fourth Dimension could produce. Superb graphics, League System, throw-ins, corners, diving goalies, superstar action and much, much more. It's as near to the real thing as you can get. "HIGHLY RECOMMENDED". You can play against the computer or a friend.

BBC/Electron Cassette £9.95
BBC B/Master 5 1/4" Disc £12.95
Enhanced Archimedes version will be available late October at £19.95

The Art Studio from Impact Software

An ingenious and comprehensive design program from Impact Software allowing you to create superb pictures and save them to cassette or disc. It features a host of easy to use commands such as Zoom, Paint, Fill, Copy etc, to help any budding artist. No rums, chips, mice or other add-ons are required. Just load and go! Keyboard or joystick controls. Works in modes 4 & 5. This must be the best value utility on the market today. Prices opposite

from only £9.95

TITLE & PUBLISHER

M = Master Compatible

IMPACT SOFTWARE (Check are BBC B)			
1. Master Challenge (40)	9.95	12.95	
2. The Art Studio M	4.95	5.95	
3. Chess M	4.95	4.95	
4. Chess 2 M	4.95	4.95	
5. Chess 3 M	4.95	4.95	
6. Chess 4 M	4.95	4.95	
7. Chess 5 M	4.95	4.95	
8. Chess 6 M	4.95	4.95	
9. Chess 7 M	4.95	4.95	
10. Chess 8 M	4.95	4.95	
11. Chess 9 M	4.95	4.95	
12. Chess 10 M	4.95	4.95	
13. Chess 11 M	4.95	4.95	
14. Chess 12 M	4.95	4.95	
15. Chess 13 M	4.95	4.95	
16. Chess 14 M	4.95	4.95	
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94. Chess 92 M	4.95	4.95	
95. Chess 93 M	4.95	4.95	
96. Chess 94 M	4.95	4.95	
97. Chess 95 M	4.95	4.95	
98. Chess 96 M	4.95	4.95	
99. Chess 97 M	4.95	4.95	
100. Chess 98 M	4.95	4.95	
101. Chess 99 M	4.95	4.95	
102. Chess 100 M	4.95	4.95	

TITLE & PUBLISHER

M = Master Compatible

M = Master Compatible			
ALPHA 2 (Loc Only)	4.95		PERFORM Series 2 30 Pin 2
M	7.25	9.25	
through M	4.95	7.95	
1 M	7.25	9.25	
2 (Loc Only)	5.95		INCENTIVE Mixer Case
ack M	7.50	9.50	
2	4.95		LEADER Ministry
2	4.95		
2 of Desktop 2 On 2	5.95	9.50	
		3.95	MANAGER Landscape

SUPERIOR SOCCER



Taking a Corner



A Shot at Goal



SUPERIOR SOCCER Arcade Soccer & Football Management



Loading Screen



Team Selection

Superior Soccer, the most brilliant soccer game ever for the BBC Micro and Acorn Electron computers, combines the best game-play features of arcade soccer games with the best strategic features of football management games. You can choose to play either the action-packed arcade game or the challenging football management game, or, for the ultimate in football excitement and realism, you can play the combined arcade and management game. So you can choose to be a player, a manager or a player-manager!

ARCADE SOCCER FEATURES

- Heading, passing, dribbling, sliding tackles, corners, throw-ins, goal kicks
- One and two-player options - play against a friend or the computer
- Full pitch scanner shows the positions of all players and the ball
- Control of playing time, game-skill and team colours
- Full on-screen time and score information and game comments

FOOTBALL MANAGEMENT FEATURES

- Four divisions with promotion and relegation
- Full season of games - home and away matches and FA Cup
- Transfers - sell players, and buy if you have the cash
- Choose your team according to strengths and skills
- Build up your finances and success by skill and clever strategy

BBC Micro Cassette.....£9.95

Acorn Electron Cassette.....£9.95

BBC Micro 5¼" Disc.....£11.95

BBC Master Compact 3½" Disc.....£14.95

(Compatible with the BBC B, B+ and Master Series computers)

Please make cheques payable to "Superior Software".

(The screen pictures show the BBC Micro version of the game.)



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